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## Original Articles.

### A PLEA FOR THE EARLY ROUTINE EXTIRPATION OF ALL NEOPLASMS.

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Until the etiology of tumors is more definitely settled, there must of necessity be considerable lack of unanimity in their treatment, in accordance with the views of the surgeon as to their causation, morphology, clinical history, etc. There are so many things to modify the treatment under all the manifold circumstances of the growth and development of neoplasms that it is scarcely reasonable to hope that the time will ever come in the history of tumor surgery when a uniform and universally applicable rule of procedure can be laid down. While this must be recognized as almost a truism, it is, nevertheless, none the less desirable to formulate from time to time, as increased knowledge and experience seem to warrant, some generally accepted and practiced method of treatment that is as nearly universally adaptable as possible. Modern surgical technic and increased opportunities for observing the end result after operative treatment in an ever-increasing number of cases have brought about a wonderful change in the last few years. This has brought within the field of operative cure neoplasms formerly thought to be out of the reach of the most heroic surgery. Unquestionably great as has been this advancement, both in method and results, is it not possible to make yet greater improvement, notwithstanding our lamentable ignorance of the real cause of the essential properties that tend to a fatal termination in a number of the different varieties of neoplasms? The gain hitherto made in the treatment of tumors from almost the very dawn of surgery has been due to two principal factors: The technic that permits union without suppuration; and the general belief in the probability that in the beginning all tumors, innocent and malignant, are local in origin. It is susceptible of easy demonstration that just in the proportion that the surgeon has recognized these factors and made them his rule of "faith and practice," so has the ratio of his success in treating tumors increased.

Owing to difficulties in the differential diagnosis of benign and malignant growths which all of our boasted methods of scientific precision have not yet enabled us to overcome, the perfect results that should follow treatment founded on the recognition of these two factors have not been obtained. In other words, it is but the statement of a common and well-known truth to say that thousands of cases end fatally every year because the surgeon is not able to decide positively of their malignant nature until past the time for successful application of even the most faultless and radical technic. Failure in such cases cannot, in fairness, be chargeable either to the operator or to his method, but is chargeable, rather, to the rule that compels him to wait for signs of malignancy in the neoplasm before resorting to operation. There can be no safety in such a rule so long as the diagnosis between an innocent and a malignant growth cannot be made absolute, and that, too, in the very beginning. That neither the science of surgery nor its allies, pathology and bacteriology, afford the means of such accurate and absolute diagnosis, the daily life of every surgeon shows only too plainly and sadly. There is none of us who cannot recall numerous cases where the growth at first gave every indication in situation, history, physical and even microscopical appearance, of innocence, and was supposed to be harmful only by the "accident of its size and situation," that afterwards proved most malignant and fatal. So prone are all neoplasms to undergo malignant degeneration, or to furnish favorable conditions for the development of malignancy, that it seems a safe, practical generalization might be formulated that no tumor, no matter what its apparent nature, is safe from malignant changes until either it is removed from the body or the patient

having it is dead. Great and even brilliant as have been the achievements of modern surgery,—and they are both great and brilliant,—it has given us no cure for any considerable number of malignant growths other or better than that handed down from the fathers: their early and complete removal. This proposition must be accepted as true and it leaves no room for the discussion here of the possible cure of a very limited number of neoplasms by other agencies. This possibility does not in any way change the truth of the general proposition that the only known cure for malignant neoplasms is their early and entire removal by the knife, or their complete destruction by some other equally effective method.

It is not the purpose now to discuss any of these methods other than the knife, valuable and effective as they are sometimes under proper circumstances, and with the right kind of restrictions thrown around their use. Much less is it necessary to mention in this presence the changes and degenerations that are observed to take place in tumors, the early behavior of which indicated characters the most benign. There is hardly a variety of benign tumors that has not been known to present at some period of its history characteristics that have made it a menace to either the life, usefulness, or happiness of its possessor. This, too, aside entirely from the question of malignancy. Malignancy is not by any means the only condition that takes place in the life of a neoplasm that makes it a danger and an ever-increasing burden and torture. Nowhere in the whole constantly broadening domain of surgery is there greater opportunity for the formulation of a truly democratic rule of procedure that will indeed guarantee "the greatest good to the greatest number."

From this point of view, it is believed it would be wise, and more in accord with surgical teaching and practice in other conditions, to remove early and completely (preferably and generally by excision) every neoplasm *without regard to its apparent nature*. The experience of every surgeon will suggest so many good reasons for the adoption of this practice, and so few real objections to it, that it would seem that opposition to it is not to be looked for from that quarter. It is expected that those who cure tumors by "the laying on of hands," the exercise of faith, and other occult practices, will raise a great "hue and cry" against the adoption of such a rule. "Ephraim is joined to his idols! Let him alone!" Earnest, conscientious surgeons are too busy in their efforts to save human life and prevent suffering and disability to slap at every fanatical gnat that swarms in the atmosphere of scientific progress.

The rule for the early and complete removal of all neoplasms, regardless of their apparent nature, is justified in many cases by esthetic reasons. They all increase in size, and the earlier they are removed the less the deformity caused by their presence, and the less disfiguration consequent upon their removal. The early operation is a mere bagatelle, both from the standpoint of possible danger and the possibility of scar or disfigurement, as compared with operation at a later time. Many of the neoplasms can be excised under the different kinds of local anesthesia, and their removal scarcely amounts to the dignity of an operation. All this without taking into consideration those conditions that may come about in any neoplasm that will make it an unpleasant and unwelcome guest from other than esthetic reasons, not to mention those that make a cure problematical or certainly impossible. The infinitesimal dangers from the occasional removal, by this rule, of a tumor that might never give serious trouble from its size, situation, or untoward metaplasia are not to be compared to those that may happen, and are happening every day, from waiting for some signs of danger before operation is undertaken.

It is indeed a question worthy of the most thoughtful and serious consideration whether it would not be advisable from every point of view, at least in the present state of our capacity to make an early and definite differential diagnosis between innocent and malignant growths, to suspect every tumor of malignancy and treat it accordingly, rather than to presume its innocence until malignancy is established. If this rule were rigidly applied to all neoplasms occurring in those parts or organs of the body that are especially liable to malignant growths, it is difficult to see wherein the practice would not prove a wise and beneficial one.

While it is believed that such a rule would be a perfectly safe one, and in the end a truly conservative one, it could not, of course, be made inflexible. It could not be safely applied in the case of probably benign tumors in situations where their removal would prove particularly hazardous, either to life or to some important bodily function. It is not contended for one moment that such a procedure should apply arbitrarily in all cases, but rather that it ought to be the governing principle for interpretation and execution in the hands of competent, experienced, practical surgeons. There are, however, some localities particularly prone to malignant disease and degeneration, in which it seems the practice ought to be well-nigh imperative. If it were invariably ap-

plied to all new growths in the mammary gland, the testicle, the uterus, ovaries, and other pelvic contents, in the stomach, duodenum, and gall-bladder, in fact to all tumors in the abdominal and pelvic cavities of whatever apparent nature, the real good that would be accomplished by the removal of malignant growths at the time of greatest promise of complete cure, and at the same time the riddance of benign ones that might in the future take on a malignant nature, or even already hold within them a focus of malignancy, can hardly be computed. This would also carry with it the operation on some cases supposed to be undoubtedly malignant and inoperable, but which at the time of operation would be found to be benign and safely operable.

The public is sadly in need of education along these lines, and at the same time it might be well for the profession to exercise a little more of the courage of its convictions in the treatment of tumors of every kind.

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# PARAFFIN IN SURGERY.

## A CRITICAL AND CLINICAL STUDY.

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(*Continued from the September number*)

### A.—FUNCTIONAL IMPROVEMENTS.

CASUISTICS

*Incontinence of Urine due to Insufficiency of Vesical Sphincter.* One Case.

Henrietta D., 56 years old, (Mount Sinai Dispensary Record No. 1979—1905) was referred to the clinic by Dr. W. M. Brickner on March 17, 1905. *History:* Following instrumental delivery fifteen years ago patient has had incontinence of urine. Wets herself frequently during the day. Urine does not flow out continuously, but at irregular intervals day and night. While the patient does not have a desire to urinate nor warning, she feels the escape of the urine. Is able to urinate voluntarily. Urine escapes in spurts when coughing, sneezing or making any muscular effort, that increases intra-abdominal tension. *Examination:* Patient involuntarily urinated while lying on the table. The vaginal outlet is relaxed. Excoriation of urine-soaked labia and buttocks. Old laceration of perineum. Slight cystocele and rectocele. Wide open, gaping urethral meatus. Urethra about 2 inches long, freely admitting a No. 35 French sound, the largest instrument at hand; could easily admit a larger sound. No sacculation of urethra; apparent complete relaxation of vesical sphincter. Uterus and appendages normal. Bladder wall normal. Urine clear; no albumin; no sugar. *Operation,* March 17th: Vagina and field of operation thoroughly prepared. A No. 20 French sound inserted into bladder and held in position by an assistant. Labia retracted on each side; index finger of left hand placed under vesical sphincter per vaginam; needle inserted through vaginal wall about one inch posterior to meatus urinarius, passed along septum urethro-vaginale until it touched tip of left index finger, where a deposit of paraffin (M. P. 120° F.) was made, needle being so manipulated as to insure, as far as possible, a circular deposit around the neck of the bladder. The injection was continued until it was plainly noticeable that the sound upon manipulation was fairly well grasped, about two drachms of paraffin being injected. Immediately following operation absolute continence; coughing, sneezing and other muscular efforts failed to cause leakage. April 14th: Ever since the operation control over bladder perfect. At the last report there was the same perfect condition.

*Umbilical Hernia.* Fourteen cases. The treatment of congenital umbilical hernias in children, until the employment of paraffin, consisted of strapping with adhesive plaster with or without the use of a button, or some form of mechanical truss. When these methods proved to be failures, nothing was left but a radical operation. The suggestion of Gersuny to inject paraffin in these cases was looked upon with scorn and fear, the main objection being that there is nothing to prevent an accidental puncture of the contents of the hernial sac or a slipping down of part of the injected paraffin into the abdominal cavity. It belongs to Escherich to have proven that these dreaded accidents are of no importance whatsoever; and since he published his splendid results in more than thirty cases without a single failure or mishap, it became routine work in Europe to treat, and cure, these cases with paraffin injections.

As our own literature does not contain the report of a single case of injection of paraffin for umbilical hernia, we shall dwell upon the technics of the procedure in detail.

The field of operation, we repeat, is prepared with the same strict precautions as though an open operation were contemplated. The technic of the operation depends to a great extent upon the size of the hernia, but notably on the presence or absence of

adhesions between hernial sac and skin covering, in other words, upon the reducibility or irreducibility of the hernial sac. If the sac is reducible (see Fig. 14) it is replaced within the abdomen, the skin pinched up, the point of the needle inserted and the paraffin injected partly in the remaining space above the hernial sac and partly in the subcutaneous tissue around the ring. (Fig. 15.) If, on the other hand, the sac is irreducible on account of being closely adherent to the skin (Fig. 16), the contents are reduced, the point of the needle inserted between the skin and the peritoneal sac in the subcutaneous tissue and, by manipulation of the needle, a circular deposit is made around the ring, sufficient to accomplish occlusion. (Fig. 17). In either case the freezing spray of ethyl chloride is applied before the withdrawal of the needle; after the needle is removed, the puncture is sealed with collodion and the abdomen strapped with a band of adhesive plaster two inches wide. This is removed about one week after the operation, at which time the hernia is found to be effectively withheld by the paraffin prosthesis.

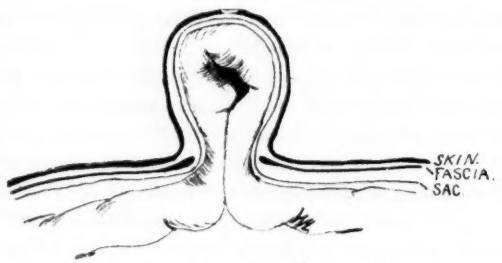


Fig. 14.

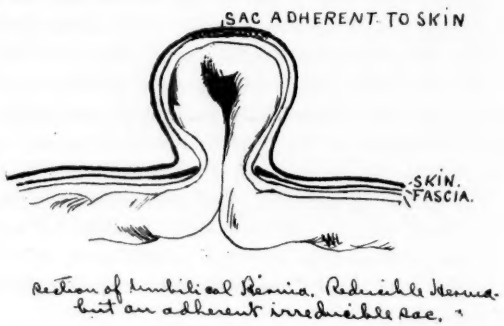


Fig. 16.

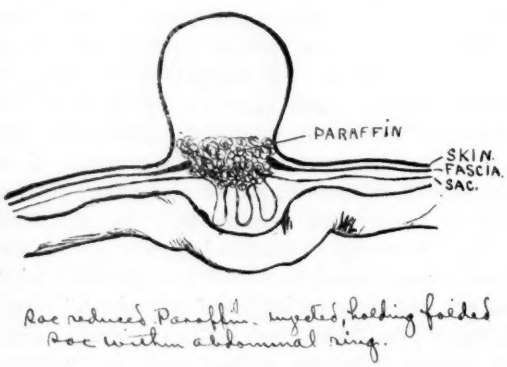


Fig. 15.

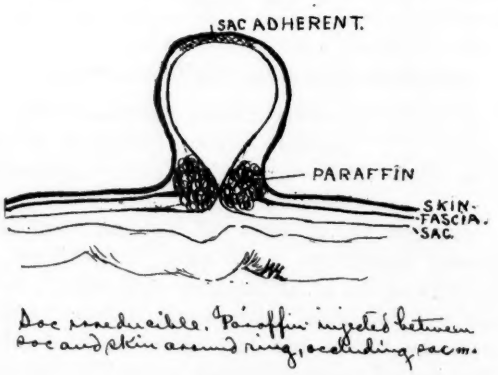


Fig. 17.

We have made use of this procedure in fourteen cases of umbilical hernia of both varieties without a failure and without mishap of any kind whatsoever, although in some of the cases we know that we did puncture the intestines or omentum and also deposited paraffin within the free abdominal cavity. This was caused by a sudden outburst of crying on the part of the child, and consequent filling of the hernial sac, and it could not be obviated, as we always operated without anesthesia.

Eva F., 4 years old (Mount Sinai Dispensary record No. 3772—1902). Congenital umbilical hernia. Otherwise healthy child, but a great cry-baby. Came to the clinic April 1, 1902, and was treated by strapping, with and without button, for a period covering almost two years, without the least benefit arising therefrom. It was not until after a most violent excoriation of the skin of the abdomen had been produced by the long-continued strapping that we determined to inject paraffin. By that time the hernia, which had not increased in size, certainly had not improved in the least. It was about one inch in diameter and projected about 1¼ inches beyond the surface of the abdomen. The ring was one-half inch in diameter. The hernial sac was large and flabby; being closely united to the skin it was

with great difficulty reduced and with still greater difficulty kept reduced. This accounts, in large measure, for the failure of the strapping method—which in our experience should not be depended upon after the third year for congenital hernias of the umbilicus. *Operation,* January 15, 1904: Paraffin of a melting point of 115° F. injected into space left after reduction of hernial sac. Amount used, one drachm. January 22d. Strapping removed; hernia reduced and does not protrude even while patient is made to cry. Paraffin pad felt around the ring as a hard lump. March 20th: Same condition; hernia reduced; paraffin lump in place.

Yetta S., 1½ years old (Mount Sinai Dispensary Record No. 2052—1905). Came to the clinic March 14, 1905. Congenital umbilical hernia, treated since birth by strapping with and without button. Diameter of ring, three quarters of one inch, protrusion, 1¼ inches beyond abdominal surface. Hernial sac adherent to skin covering and irreducible. *Operation,* March 14, 1905: Paraffin of a melting point of 115° F. injected between skin and hernial sac around the ring. Retention immediate. Amount used, one drachm. Bandage applied. March 21st: Strapping removed; hernia reduced. Two months later: same condition continues.

The others of our cases of umbilical hernia cured by paraffin injections, drawn from private as well as clinic material, come under the head of either of the two types reported above. They present no peculiarities and, therefore, will not be detailed here.

(*To be continued.*)

### To Remove Rust From Instruments.

The instruments are placed over night in a saturated solution of stannous chloride, which causes the spots to disappear by reduction. The articles are then rinsed in water, laid in a hot solution of soda soap, and dried. It is well to rub them with absolute alcohol and prepared chalk. Another convenient method for removing rust is to lay the instruments in kerosene.

Paraffin oil is the best preservative against rust, and the most convenient way of applying it without getting an unnecessarily thick coating is as follows: One part of the oil is dissolved in 200 parts of benzine, and the objects, after being thoroughly dried and warm, are plunged into the solution. Instruments with joints, as scissors or needle-holders, are worked in the fluid, so as to cause it to penetrate into all crevices, and the benzine is then allowed to evaporate in a dry room.—*Pharmaceutisches Zentralblatt.*

## THE CYSTOSCOPE AND URETER CATHETER IN THE DIAGNOSIS AND PROGNOSIS OF SURGICAL DISEASES OF THE KIDNEY.*

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In recent years there has probably been no single advance in the surgery of the genito-urinary tract to compare in importance and sphere of usefulness with the discovery and perfection of the cystoscope and its adjunct, the ureter catheter. These have made possible a precision of diagnosis which would have remained impossible without them, and have given genito-urinary surgery a stimulus such as no other single method could give, and still the use of the cystoscope and ureter catheter is, and must remain only one of the methods, and not the only one, necessary to a complete and exact diagnosis of the disease. Too much has been claimed for it by some, and too much expected by others. Lack of expertness has led many to denounce it, and to give it the undeserved stigma of an unreliable and dangerous method. But with increasing appreciation of, and attention to, the requirements of a perfect cystoscopic examination, and with increased dexterity and experience, these scoffers grow fewer and cystoscopy and ureter catheterism are slowly, but none the less surely, coming into recognition as two of the most valuable and reliable of diagnostic methods.

The straight cystoscope is to the bladder what the ophthalmoscope is to the eye. The prismatic, or oblique vision cystoscope is more, since with it all parts of the bladder wall may be brought into the field of vision, a thing that is an impossibility with the straight instrument. This latter fact is of particular importance in the diagnosis of the source of an hematuria, since we may have bleeding from new growths, ulcerations, etc., at other points of the wall than the trigone and its immediate neighborhood. To illustrate, I would cite only one case, a patient suffering with hematuria, who had been cystoscoped by a practitioner in this city, a diagnosis of hematuria of renal origin made, and a nephrotomy advised. Later he came under my observation, and examination showed clear urine coming from both kidneys during the period of the bleeding, while the blood was seen to come from an ulceration upon the anterior bladder wall, well above the sphincteral margin. Cure of the ulcera-

* Read, in abstract, before the Section on Genito-Urinary Diseases of the N. Y. Academy of Medicine, April 19, 1905.

tion caused all symptoms to disappear. It would have been impossible to manipulate the straight-vision cystoscope so as to bring the ulcer into the field of vision. The prismatic cystoscope does all that the straight cystoscope can do, and makes possible things which are not possible with the straight; therefore it is my instrument of choice.

The cystoscope is of value in the diagnosis of diseases of the kidney, to determine the following:

1. Whether one, two or more ureteral orifices are present.

The cases in which more than two orifices are present are rare. Still they have been seen. Where the belief exists that a supernumerary opening is present, the doubt should be cleared up by passing a ureter catheter or sound into each of the suspected openings.

2. Whether these orifices are normal in situation and appearance.

The orifices are of various types, the longitudinal slit, the crescentic slit, the oval, vulvar shape, the circular, etc.

When the bladder wall is normal, the color of the tissue surrounding the ureteral orifice is appromimately that of the rest of the trigone, there being usually, however, a number of more prominent bloodvessels radiating from the margin of the orifices. In several instances, however, in examining anemic, emaciated persons, I have been unable to see any interureteral ligament, periureteral vessels, or ureteral orifices. In such cases it has been necessary to watch for the swirl of urine, and the momentary appearance of a ureteral opening at the point where the ureteral orifice ought to be. If an hypertrophy of the median lobe of the prostate exists, the orifices may be hidden in the sulcus behind this. In cases of cancer involving the trigone, particularly in the female, the ureteral orifices may be so hidden in the folds of the growth that they are visible only as dark slits, at the moment that urine is discharged. Again, a new growth, of papillomatous formation, may droop over and cover the orifice. In case of doubt, or if it be impossible to locate the ureteral orifice, the internal administration of methylene-blue; or the hypodermatic injection of indigo-carmine, by coloring the swirl of urine, is of great use in helping to locate the orifice.

3. Whether one or both ureters functionate.

The kidneys do not always functionate equally. Frequently, while the urinary jet is seen to be active upon one side, the other ureter may be seen to go through equally active peristalsis, but still no swirl be visible. Or peristalsis may be much less active. One or both kidneys may, upon the mere insertion of the cystoscope, suspend their action (apparently reflexly) for a time, and no activity of one or both ureters be visible. A similar condition is frequently noticed upon catheterization of the ureter. I have repeatedly seen the ureter upon the side from which the kidney had been extirpated, go through fairly regular peristaltic movements.

4. Whether, if the ureters do functionate, the fluid discharged be *macroscopically* clear, or turbid.

Frequently the fluid discharged will be seen to be distinctly turbid. If this is the case, it can be easily distinguished whether the turbid fluid comes from one or from both ureteral orifices, and if from one, which is the source of the turbid jet. Naturally the fluid used to fill the bladder must be *perfectly clear and transparent,* and no pains should be spared to thoroughly cleanse the bladder cavity before it is filled for the examination. When the jet is not *macroscopically* turbid, the ureter catheter must be resorted to.

5. If the urine be turbid, whether the turbidity be due to pus, or to blood.

When pus is being discharged from the kidney, the jet from the involved ureter is of a more or less whitish color. At times, a sausage-shaped convoluted pus clot or stream is seen to ooze from the orifice of the affected side.

If blood be issuing, the jet of reddened urine is seen to spurt from the ureter of the affected side like smoke from the crater of a volcano, and to disperse in the fluid which fills the bladder, like smoke in the air. It is this dispersion of the colored jet which makes the filling of the bladder with a fluid medium preferable to air filling. If a blood clot extrude, it is recognizable by its dark red color.

6. If the urine be turbid, from which ureter the turbid stream comes.

As stated above, if the jet be *macroscopically* turbid, it is usually easy to locate the source of the trouble, provided the ureters be brought *fully and plainly* into view. It is necessary that the bladder cavity be sufficiently distended to make the manipulations of the instrument easy to the operator, and to enable him to closely observe the ureteral orifices, without bringing the lamp of the cystoscope into contact with the bladder wall. Even the so-called "cold lamps"—which are only relatively cool—can cause a severe burn, if kept in contact with the bladder wall for a sufficient length of time.

7. If one ureter does not functionate, which one it is.

If, after watching the ureteral orifices for a reasonable length of time, no jet of urine is seen to issue from one or the other, it is advisable to insert

the ureter catheter into the sluggish side, and, if necessary, to leave it *in situ* for a time.

8. If either ureter orifice be abnormal, which one shows the change and whether this be

a. *Displacement*: Frequently one or other of the ureters may be abnormally placed. This may be either slight and the orifice be simply a little out of its ordinary and expected location (this is usually congenital), or it may be more decided (particularly in females), and be either a dislocation downward, as in the presence of a cystocele, or laterally, as by the encroachment of some mass from without upon the trigone (tumor, dislocated uterus). Cases are also on record in which the ureter opened within a diverticulum.

b. *Stricture*: There may be present a stricture at the ureteral orifice. This may be congenital, or acquired. I have seen one such case, apparently of congenital origin, in a female who was cystoscoped for diagnostic purposes. There had been no symptoms referable to either kidney, or ureter, at any time during her life, and yet the left ureteral orifice was found to be so small that not even with the smallest ureter catheter or sound could we enter the opening. With each peristaltic movement the vesical end of the ureter assumed a spherical shape, protruding into the cavity of the bladder to the size of a good-sized marble. The stream of urine was seen to be discharged through a minute opening upon the lower, lateral surface of the tumor, which, after the emptying of the urine was complete, collapsed completely, the ureter resuming its normal position and contour, until the next peristalsis.

c. *Eversion:* The orifice may at times be everted. It is said that this points to the presence of a stone at some part of the ureter.

d. *Inflammatory changes:* These are recognizable from the fact that the mucous membrane at and about the ureteral orifice upon the affected side is reddened and roughened. It may even be the seat of ulcerative changes. These changes are particularly of value in the recognition of renal tuberculosis, in which condition they are present at and about the ureter of the corresponding side. Where the changes involve the entire trigone and the membrane about both ureters, recourse may be had to the ureter catheter. In such cases the urine separators cannot be relied upon.

e. *Ulcerations*: These represent a further advance of the inflammatory changes.

f. *Retraction*: There may be a retraction of the ureteral orifice. I have seen it in cases of vesical carcinoma, as an accompaniment of renal tuberculosis, and after nephrectomy.

g. *Absence*: In congenital absence of one kidney or ureter, there may be absence of one ureteral orifice. If this condition is suspected, a positive statement to the effect that there is only one ureteral orifice should not be made until, after the use of the methylene-blue or indigo-carmine tests and the ureter catheter, we have found no ureter.

9. Whether the rest of the bladder wall is normal, and, if not, the character, location, and extent of the abnormality.

The determination of the condition of the body of the bladder is of the greatest importance in making a diagnosis of the condition of the kidneys. The bladder may, at times, be so inflamed, or the changes may be of such a character as to make ureter catheterization impossible until the vesical changes are removed or very much improved.

So much the cystoscope will reveal to us, if properly manipulated. More it cannot do. And, naturally, the field of the cystoscope is in the ***diagnosis*** of vesical and renal diseases. Into the consideration of the prognosis thereof it can only enter in so far as this is dependent upon the correct diagnosis of the disease condition.

Correctly speaking, the ureter catheter plays a much greater rôle in the diagnosis and prognosis of diseases of the kidney than does the cystoscope. Endovesical separation of the urines has been proposed as a substitute for the ureter catheter, on the ground of its lesser danger; but the most recent reliable observations (Rafin, *Lyon Médical,* February 12, 1905), show that the separation of the urines is not reliable in either the chemical, microscopical, or bacteriological direction.

It is advisable, in attempting to determine the relative functional capacity of the kidneys, to instruct patients not to drink much fluid prior to the examination, since we should otherwise obtain an incorrect result.

The ureter catheter is of value to us in two directions.

First. Diagnosis—its chief field of usefulness.
Second. Treatment.

I. DIAGNOSIS — Its purpose in diagnosis is

a. To determine whether one or two kidneys be present, and if one be absent, which it is.

The synchronous flow of urine from both catheters (employed simultaneously) is not absolute proof of the presence of two kidneys. The flow of urine at different periods from the two catheters, I believe to be so. Also the flow of urines of different specific gravity and percentage of urea. The absence of a flow of urine from either catheter does

not, of itself, denote the absence of a kidney upon the corresponding side. The lumen of the catheter may be occluded, the eye of the catheter likewise, the eye of the catheter may lie within a diverticulum, or there may be, at times, a total anuria, apparently of reflex origin, lasting sometimes for a decided period of time. Before a decision is reached upon this point the operator must, by suitable maneuvers, exclude the first three causes, and, in their absence, the catheter may, if need be, be left lying in the ureter for a time, until the reflex anuria has disappeared. If one ureter be found, in spite of all these tests, to deliver no urine within a period of several hours, the belief is warranted that there is no kidney upon this side.

b. To determine the number of ureters present, and which is present.

This test is similar to the above, except that, in case a supernumerary ureter is suspected, the attempt must be made to pass a catheter into the structure resembling a ureteral orifice.

c. To determine the functional activity of each kidney, and their relative activity with regard to the

1. *Quantity of urine*: In order to measure this, it is advisable, wherever possible, to leave a fair-sized catheter in each ureter for about an hour. It is necessary, however, to assure ourselves, from time to time, that the catheters have not become occluded.

2. *Specific gravity*: This varies at different times in the same patient and only a comparison of urines taken from a period, at different sittings, can be of value, if similar differences be found to persist.

3. *Chemical composition*: This, too, may vary, at different times in the same patient, under different conditions of diet, at different periods of the day, etc., and a just opinion can be formed only after a test similar to the one mentioned in the preceding paragraph. The percentage of urea, and the presence or absence of serum albumin are the principal points of value for consideration. A persistently low percentage of urea speaks for an impairment of the function of the kidney in question.

4. *Microscopical character*: Blood, pus, epithelia and casts are to be looked for. Usually, even in spite of the greatest gentleness and care in the operation, catheterization of the ureter will result in a slight trauma of the ureteral wall, and the presence in the urine of a few erythrocytes, isolated leucocytes, and a moderate number of ureteral, or pelvic epithelia, these last-mentioned depending upon whether the catheter has been advanced to the renal pelvis, or not. To make a diagnosis of pyelitis upon the presence of a few pelvic epithelia, after catheterization of the ureter, as seems to be the custom in certain quarters, of late, is as ridiculous as it is unscientific. In many cases, the longer the ureter catheter remains in the ureter, the greater becomes the quantity of blood in the specimen of urine collected.

5. *Bacteriological character*: An important factor in the determination of the diagnosis and prognosis of kidney diseases is the determination of the presence or absence, and, if present, of the variety of the bacterial elements. Culture experiments are often imperative, and even inoculation experiments. The latter is particularly true of the tubercle bacillus, which may not be found upon repeated microscopic examinations, but which will almost invariably betray its presence by a positive result upon the inoculation of guinea-pigs. And in view of the great frequency of a primary renal tuberculosis as the starting point of a severe and extensive tuberculosis of the urinary tract, a negative diagnosis should never be made in a case suspected to be a renal tuberculosis, until inoculation experiments have proven negative.

6. *The Phloridzin Test*: This may be employed to aid in determining the functional power of the kidney. Its efficacy is questioned by many. I have found it of value as an adjunct to other tests.

7. *Methylene Blue Test*: A favorite test with French surgeons, to determine the functional power of the kidneys, it is falling more and more into disuse.

d. To locate the origin of blood, pus, cellular elements and microörganisms, with reference to

1. The right ureter,
2. The left ureter,
3. The right kidney,
4. The left kidney.

While blood or pus may, when the urine is macroscopically turbid, be seen with the naked eye to issue from one or other ureteral orifice, the ureter catheter is necessary to determine whether the blood or pus comes from the ureter, or the kidney, when the turbidity is not pronounced. Where the foreign substance is of ureteral origin, the passage of the catheter up beyond the source of the pus or blood, to the kidney, is followed by the emptying of gradually clearing, and later clear urine. Similarly, too, the unaffected side discharges clear urine. Only if the catheter has been roughly inserted, or has been left *in situ* for a lengthy period, will the urine then become turbid, and this turbidity will be a gradually increasing one, and be found to be due to blood.

e. To recognize whether an obstruction be present in the ureter, and to determine the character and location thereof.

1. *Stricture*: The occurrence of stricture of the ureteral orifice has been spoken of previously in this article. A stricture may, however, be situated at any point along the course of the ureter. When the ureter catheter reaches the stricture, its advance is arrested. When, however, we employ the finely-graduated ureteral bougies, we find that, if we have located the distance of the obstruction from the ureteral mouth, our finer pointed bougie engages in the stricture and may even pass through it. After sufficient dilatation, the normal-sized ureter catheter will pass through. Should retention have occurred behind the stricture, it will be recognized by the rapid discharge of a quantity of fluid through the cathether, occurring at a point not sufficiently advanced to be the renal pelvis. In order to locate the exact distance of the stricture from the ureteral orifice, the so-called "zebra" catheters and bougies are of the greatest service. These are marked in brown and black, in alternating centimeters. By counting the number of spaces passed into the ureter, the distance in centimeters is easily determined.

2. *Stone in the ureter*: To determine whether the obstruction is a stone, Kelly's wax-tipped catheters may be employed. Another method is the employment of the metal-tipped and metal-cored catheter connecting at the outer end with a phonendoscope. This was devised and employed by me, without much satisfaction, during 1901. The device was never published, but Follen Cabot, without having been aware of my trials, has recently again proposed and published the same device.

3. *Valve, or flap:* If the catheter or bougie engages in an obstruction, and later, by partly withdrawing, or slightly turning, and again advancing it, it can be made to pass the obstruction, the likelihood is great that the obstruction is of valve, or flap nature.

4. *Kink, or bend:* In order to determine this fact, as it occurs frequently in prolapsed kidney, it is well to use a metal-cored catheter, and to determine its course and position afterward, by the employment of the x-ray.

5. *Pressure of adjacent tumors:* In the presence of an abdominal tumor, there is, at times, sufficient pressure of the mass upon the ureter to render difficult the passage of a bougie or catheter. The obstruction can, however, usually be readily overcome by the employment of a smaller catheter, as it is not an absolute obstruction. The exclusion of a stone, in the presence of an abdominal tumor, and the fact that no hydronephrosis is discovered beyond the obstruction, usually suffices to make the diagnosis of obstruction due to external pressure probable.

f. Presence, or absence of

1. *Hydronephrosis:* The continued flow, or gush of a large quantity of fluid, clear, or slightly bloody, after the entrance to the renal pelvis has been passed, and the gradual disappearance of the tumor present, enables us to make the diagnosis of a hydronephrosis.

2. *Pyonephrosis:* The emptying of more or less purulent fluid, and the disappearance of the tumor, make the diagnosis of pyonephrosis clear. Should the lumen of the catheter become occluded by a blood clot, or pus clot, the gentle injection of sterile boric acid solution will dislodge the clot, dilute the contents of the sac, if necessary, and permit of freer emptying of the contents.

3. *Stone in the pelvis:* When there was a suspicion of stone in the pelvis, I have been able, in a number of instances, to determine its presence or absence, by the positive or negative outcome of the "pelvic distention test," first proposed by me in *The Medical News,* October 11, 1902. The test consists of the passage up into the renal pelvis of a ureter catheter as large as will comfortably pass. Upon entering the renal pelvis, a quantity of warm, sterile, 1 per cent. boric acid solution is slowly injected, until the patient complains of a cramp-like pain in the region of the kidney (usually after 30-40 c.c. have been injected). The fluid is then allowed to flow off, and the procedure repeated three or four times during the same sitting. If a stone be present in the pelvis, this is caused to move, by the distention, and, within 24 hours (usually within a few hours) a distinct hematuria results. In each positive case controlled by operation (even without the employment of the x-rays), a stone, or stones have been found. In every case with a negative result, controlled by operation, no stone has been found.

g. In the presence of kidney disease, by means of the manipulations described above, we are able to determine, with a fair degree of certainty

The nature of the disease—whether inflammation, foreign body, or tumor.

Whether one, or both kidneys be affected.

If only one, which one is diseased.

If both, which is more extensively affected.

In case of proposed operation, whether the kidney which it is proposed to leave behind is capable of taking on the work of the other, which is to be removed.

That it is not always possible, even with the

greatest care, to be absolutely certain of the diagnosis, the following case will illustrate:

A young man of 26 was referred to me, in February, 1901, with the history of a cystitis, following repeated attacks of colicky pains in the left renal and ureteral regions. At one time he had passed a small calculus, per urethram, and had noticed that the urine, which was constantly turbid, was at times slightly tinged with blood. Cystoscopy showed a *cystitis colli et corporis.* On the left postero-lateral portion of the bladder wall a large area of cystitis with ulceration was discovered. Catheterization of the ureters determined the source of the suppuration to be in the left renal pelvis. Repeated observations, accompanying vesical treatment, always gave the same result. Repeated microscopical examinations of the urine failed to reveal any tubercle bacilli. Lavage of the renal pelvis was employed for four months, with the result that the urine cleared up somewhat. During the latter part of June, the distention test was first employed, with the result that the patient experienced a pronounced hematuria. Subsequent lavage of the pelvis, *without* distention, was *not* followed by bleeding. During the last week in July, 1901, a radiograph was made, with the result that a stone was revealed in the left side, at a point corresponding to the kidney. On the following day nephrotomy was performed by Dr. C. N. Dowd, and a calculus removed in two pieces, from the lower pole of the pelvis. Palpation of the exposed kidney had failed to reveal a stone. Although the patient recovered, the urine did not clear up. During October, 1901, the patient experienced ill-defined pains in the region of the left kidney, and, on October 12th, passed a small calculus fragment. The ulceration on the bladder wall would not heal, and the left ureter continued to discharge purulent urine, which was found to swarm with microörganisms. Lavage of the renal pelvis, too, in spite of the same aseptic and antiseptic precautions as formerly, began to be badly borne, and to be followed by decided febrile reaction. The patient was, therefore, referred to Dr. Dowd again, and a nephrectomy performed, which revealed several small abscesses in the kidney. Recovery from the operation was good, ***but still the urine remained turbid,*** and pus shreds and clots could be seen to exude from the left ureter. The ulcers, also, remained in about the same condition. The condition was looked upon as being now, in all probability, a pocket of pus, at the site of the kidney, and irrigations of the bladder and ureter stump were made, without any apparent benefit. During May, 1904, an ill-defined, deep infiltration began to appear in the left inguinal region, following vibratory treatment by his then attending physician, and fluctuation appeared at the end of that month. Incisions were made by his physician (one above and one below Poupart's ligament), and the sinuses continued to discharge. Toward the end of September, 1904, the probe discovered a foreign body at the bottom of the upper sinus-opening, which, on removal by Dr. Dowd, a few days later, proved to be a large calculus. For a time afterward the urine grew clearer, only to become turbid, at times, later on, with the occurrence of ill-defined, painful sensations in the left renal region. Profiting by the result of our previous experience, when we had not suspected the possibility of the presence of a calculus following the nephrectomy, several x-ray examinations have been made, but have disclosed no stone. We were not misled by the persistence of the symptoms following the nephrotomy, which had disposed of the stone found in the renal pelvis, but, upon the nephrectomy, no stone was found in the kidney, and we had, therefore, no reason to refer the persistent symptoms to a possible calculus. I must add that both operations were, in my opinion, faultlessly performed. I can only explain the occurrence by assuming that a small fragment of the calculus may have been broken off, at the time of the nephrotomy, and escaped into the perirenal tissues, at the time of, or subsequent to, the operation, and lodged below the lower pole of the kidney. There, during the post-operative period, through phosphatic deposits, it grew in size, and gradually worked its way downward, along the psoas, under the iliac fascia, to its point of emergence.

A case like the above serves only to emphasize the need for the employment of *all* the diagnostic methods at our disposal, in times of doubt, and that, ever then, occasionally, it may remain for an exploratory operation to clear up the case finally.

TREATMENT

While not coming strictly within the scope of this paper as it is entitled, still the various therapeutic possibilities of the ureter catheter may be briefly referred to.

a. Dilatation of strictures: As stated before, it is possible to gradually dilate ureteral strictures, by the passage of graduated ureteral bougies, or catheters, and thus to improve drainage from the kidney, or ureter, in cases involving the ureter, pelvis, or kidney.

b. Irrigation of the renal pelvis: The utility of this procedure has been much overrated, in some quarters. It can be of benefit only in infrequent

cases of pyelitis *occurring alone*—and such cases are admittedly rare, if they occur at all. Casper states the case plainly and *sanely,* when he says that: "The majority of cases of pyelitis heal spontaneously, or under the use of the usual agents, as, for instance, the various springs. Only when these milder measures fail, or when, because of the long duration of the disease, they offer no prospect of a result, is it permissible to employ injections into the renal pelvis." But when the tissues of the kidney itself are involved, the experiences of others, as well as my own, have taught me that renal pelvic lavage is unjustifiable, yes, even harmful, except in those rare cases in which it is necessary to treat the diseased remaining kidney, as a choice of two evils. Of late there has been some talk about the possibility of treating Bright's disease by pelvic lavage. Naturally I have read with the greatest interest the reports of the cases published by the various writers upon this topic. I cannot enter upon any detailed discussion of the matter here; but a careful perusal of the statements made by the various writers will lead the reader to the conclusion that they have not proven their cases by any means, but that they have rather betrayed a lamentable lack of knowledge of the pathology, and particularly of the usual course, of this disease, when under any form of treatment. When cases of Bright's disease are being treated by pelvic lavage, ***plus the ordinary treatment,*** and the results obtained are no better than those obtained by the usual treatment alone, I cannot see in what way the writers are justified in claiming that the pelvic lavage has been the agent to which the improvement may be ascribed. It is always a good plan for the physician who aims to treat *any* disease, to have at least a fair knowledge of the histology of the organs, and the pathology of the disease he proposes to treat.

c. To remove the caculi: Kolischer has recommended the injection of sterilized vaseline into the ureter, beyond the location of a calculus, to facilitate its escape. Bransford Lewis has inserted a small forceps half an inch into the previously dilated ureter, to grasp and remove small ureteral calculi. Naturally, such delicate procedures require the greatest special manual dexterity, and are possible to but very few.

In the prognosis of kidney diseases the ureter catheter plays a rôle first in aiding us to a correct diagnosis of the conditions affecting the kidney; secondly, in determining the presence of, and the functionating power of, both kidneys, and especially, in case of projected operation, the power of the kidney which is to be left, to take up satisfactorily the work of excretion; thirdly, in improving the drainage from the kidney through the ureter, and thus, at times, avoiding an operation, and aiding nature to effect a possible cure.

These things the cystoscope and ureter catheter will do for the diagnosis and prognosis of surgical diseases of the kidney.

The dangers of cystoscopy and ureter catheterization have been much overrated. In *skilful* hands and with *proper precautions,* the risks are comparatively small. Danger is present, however, and reckless or unnecessary employment of either instrument is most strongly to be advised against. Great care and gentleness must be employed in the necessary manipulations; cauterization of the vesical wall must be avoided, if possible; strict aseptic and antiseptic measures must be employed. Unnecessary manipulations should be avoided.

Where the requisite skill and dexterity are possessed, and where the necessary care is employed, these methods are of the greatest value to us as adjuncts; but *adjuncts* they must and will remain.

53 EAST FIFTY-EIGHTH STREET.

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In the *Pennsylvania Medical Journal,* May, 1905, Hawkins describes . . . "nine different species of perirectal abscesses: 1. Ischiorectal abscess. 2. Abscess from necrosed coccyx. 3. Abscess at coccyx, opening into the rectum and containing a tuft of hair resembling very much a camel's hair pencil with the hairs pushed back into the quill handle. 4. Prostatic abscess. 5. Abscess in the perineal body, opening into the vagina near the vulva. 6. Ovarian abscess opening into the rectum. 7. Abscess due to strictured urethra. 8. Abscess due to stricture of the rectum. 9. Post-operative abscess."

[The group "ischio-rectal abscess" might be subdivided. Some of the other varieties are rare and ought to be described as pararectal rather than perirectal. The third variety of abscess is an *infected dermoid cyst,* a condition not altogether rare in the coccygeal region.—ED.]

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FOR ACUTE TORTICOLLIS.—Dr. Henry Buck, of Devonshire, England, cured lumbago and acute torticollis in ten minutes by the following method: Put a large handful of crushed capsicum pods in a pint of hot or cold water and let stand for thirty-six hours. Soak a piece of lint in this liquid and apply to the affected part, covering the lint with oiled muslin or oiled silk. This never blisters but always relieves.—*The Medical Summary.*

# THE HISTORY OF ARTIFICIAL LIMBS.

By JOSEPH MACDONALD, JR., M.D.,*

NEW YORK.

Prosthetic applications were not unknown in early times, and there are evidences of the employment of wooden legs even before the beginning of the Christian era. Serious attempts to replace amputated extremities by mechanical imitations, however, were not made, as far as can be learned, before the sixteenth century; and the manufacture of artificial limbs approaching in type those now in use had its birth within the memory of men still living. In this art, as in so many others that make for the material progress of civilization and the preservation of health and happiness, America has been preëminent.

Belzoni and others found in an ancient sarcophagus artificial teeth made of sycamore wood. A set of artificial teeth on the bridge-work system was also found in an Etruscan skull of about 200 A. D. Plaster restorations of the nose, ears and lips are clearly described in Susruta about 300 B. C. But the earliest representation of an artificial limb is that of a satyr who is depicted with a wooden leg on a Graeco-Roman vase in a collection at the Louvre in Paris. In a Graeco-Roman mosaic there is also a sportsman represented with a wooden leg. Both of these are probably of the pre-Christian period.

The oldest artificial leg still in existence was found in a tomb in Capua, Italy, and is now preserved in the Museum of the Royal College of Surgeons, London, where it is thus described in the catalogue:—

"Roman artificial leg; the artificial limb accurately represents the form of the leg; it is made with pieces of thin bronze, fastened by bronze nails to a wooden core. Two iron bars, having holes at their free ends, are attached to the upper extremity of the bronze; a quadrilateral piece of iron, found near the position of the foot, is thought to have given strength to it. There is no trace of the foot, and the wooden core had nearly crumbled away.

"The skeleton had its waist surrounded by a belt of sheet bronze, edged with small rivets, probably used to fasten a leather lining.

"Three painted vases (red figures on a black ground) lay at the feet of the skeleton. The vases belong to a rather advanced period in the decline of art (about 300 years B. C.)."

We learn from Herodotus that an Elean captured by Spartans and confined in stocks as a torture preliminary to the infliction of death, amputated his own imprisoned foot, escaped, and, later, procured a wooden foot. Pliny records that Sergius, 167 B. C., wore an artificial hand and fought with it. A well authenticated prosthesis was the iron hand made in 1504 for Goetz von Berlichingen, a knight of Nuremberg. (Fig. 1.) It was a clumsy

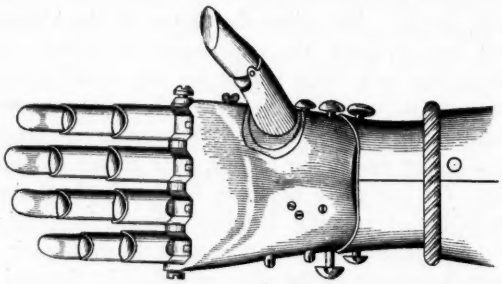

Fig. 1. Iron Hand of Goetz von Berlichingen, 1504.

structure, but an ingenious one. By means of buttons and levers it accomplished certain finger movements. Half a century later Ambroise Paré described an iron prosthesis that had been devised for a Hugue-

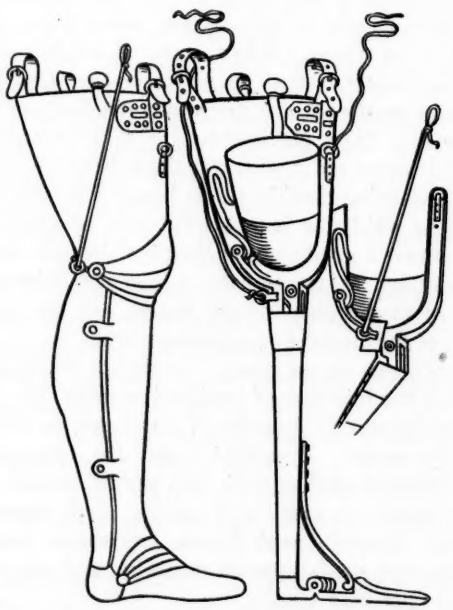

Fig. 2. Ambroise Paré Leg, 1561.

not captain whose arm had been lost in the siege of Fontenoy.

As I stated before, it was at that time, viz., in the sixteenth century, when a new impetus was given to surgery by the genius of Paré, that efforts were

* Read by invitation at the annual meeting of the Association of Erie Railroad Surgeons, New York, September 12, 1905.

made to supply substitutes for missing legs that would be more than mere supports. It is not unreasonable to suppose that Paré's application of the ligature to amputations in place of boiling oil, decreasing the agonies of the operation and increasing the number of recoveries, had much to do with the interest given to the manufacture of artificial limbs.

Wooden legs, having no knee joint, obliged the wearers to assume an awkward and fatiguing gait, in which the entire extremity had to be swung through a wide arc at each step. Paré himself devised an apparatus with a knee joint which, while usually fixed, could be moved by means of a thong running to the hip. (Fig. 2.) Leather and paper-and-glue were soon employed instead of iron. The prostheses were made by mechanics of all sorts, but a few of them acquired celebrity by their skill,—notably Lorrain, a French locksmith, whose work was largely directed by the great Paré. Father Sebastian, a Carmelite monk, later produced of sheet tin a clumsy arm which, by means of sundry springs, was capable of certain articulations. It is said, however, that these articulations failed when the stump had shrunken within the apparatus. Bailiff, a mechanic, also made movable arms, patterned largely after those of Father Sebastian. It is recorded that the Duke Christian von Braunschweig wore an artificial hand, 1622. Peter Lowe in his "Discourses of the Whole Art of Chirurgery," 1634, shows several forms of artificial legs that were used in the sixteenth and seventeenth century, and many others are found in the works of Ambroise Paré. These legs were made of wood and attached by straps.

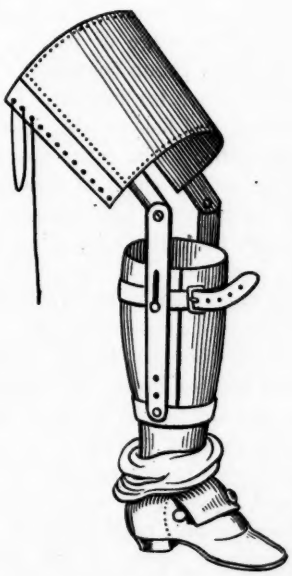

Fig. 3. Verduyn Leg, 1696.

I may remind you that in Paré's time the organs of locomotion and prehension were not the only ones for which inanimate substitutes were made.

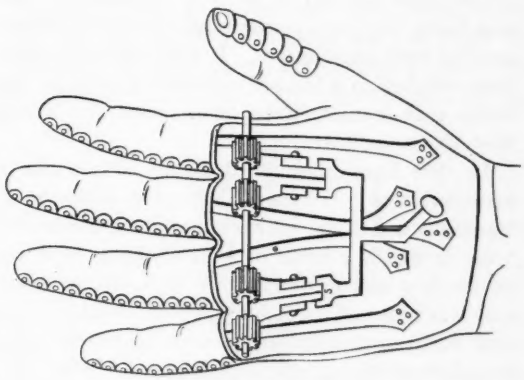

Fig. 4. Artificial Hand devised by Paré, 1564.

In the works of Ambroise Paré, there is a chapter dealing with "The means and manner to repair or supply natural or accidental defects or wants in man's body." He describes the use of artificial eyes and also artificial noses. He mentions a method for making an artificial tongue to help those who cannot speak by reason of its loss, and also gives a drawing of this instrument and a full description of how it should be fixed in the mouth. He also gives an account of making an artificial palate from a plate of gold or silver, which he states should be little bigger than the cavity itself.

Falcinelli, a surgeon of Florence, in 1649, mentions the use of "artificial eyes of silver and of gold and of crystal painted in various colours," also artificial ears made of the same metals, which were painted the color of flesh and fixed by means of strings to the head or sewn into the skin by means of gold or silver wire. Silver noses, etc., were made even earlier than that.

The Dutch surgeon Verduyn (1696) constructed an artificial leg consisting of a wooden foot and a hollow copper cylinder lined with chamois and strengthened with steel splints, into which the stump fitted. (Fig. 3.). There was a hinge joint at the knee. The apparatus was attached to the thigh by means of a broad band. This contrivance was unsatisfactory and throughout the eighteenth century the use of the thigh as a support was abandoned, and the head of the tibia, as in the older legs, was again employed for the purpose.

About the same time, 1692, Lamzweerde constructed a leather hand in which a pen could be held.

In 1755 H. Ravaton constructed an artificial limb by means of which a cavalryman was able to continue his field service. It consisted of a laced leather boot filled with horsehair and bearing a joint at the ankle operated by a spiral spring. Charles White, who was one of the first surgeons to amputate below the knee, constructed a prosthetic apparatus for such amputations. It consisted of a jointed foot attached to a leather covered tin cylinder, fastened with leather straps below, and with a steel bow above the knee.

In 1761 Laurent supplied a man with a pair of artificial arms. Gavin Wilson of Edinburgh, towards the end of the eighteenth century, constructed arms in which a knife or fork could be held, and on the first and second fingers of which an apparatus was attached for holding a pen. He also made legs for amputations above and below the knee, modelled on the apparatus of Ravaton. They were fastened to the body by a strap running over the shoulder of the opposite side. Only the knee joint was movable.

Addison, London, made a wooden foot with toe joints as well as ankle joint. Prof. J. H. Brünninghausen, 1796, constructed an apparatus adaptable to amputations either above or below the knee. The ankle joint was fixed, but by means of springs motion was secured both at Chopart's joint and in the toe joints.

Prof. J. C. Stark (Jena, 1802) adapted this apparatus to amputations through the thigh, adding a limited amount of motion at the knee joint. The leg was too heavy to be practicable.

Johann Georg Heine (Würzburg, 1810) the founder of German orthopedics, constructed a complicated leg for both high and low amputations, introducing a ball joint at the ankle. The leg was fastened by means of a corset about the trunk.

In 1812 Pierre Baillif, a Berlin dentist, constructed an artificial arm in such manner that the fingers moved synchronously with motions at the elbow. The hand was of lead and weighed one pound.

The war of 1812-1815 aroused new interest in the construction of artificial legs. The apparatus constructed by James Potts for the Marquis of Anglesea (1816) was made of two hollow cones of wood, one for the stump of the thigh, the other to replace the leg. The movable knee joint was of steel, the ankle joint of wood, both reinforced with steel anteriorly and catgut posteriorly. Gay, Potts' successor, still makes a leg similar to the "Angelsea leg" with a special modification for horseback riding, consisting of a thick leather pad where the leg touches the saddle.

Prof. Antenrieth (1818) constructed artificial wooden legs fastened by straps to a belt about the waist, which is secured, in turn, by a strap passing over the shoulder of the opposite side and to a second ring about the thigh stump. There is no provision for movement of the toes, but the ankle is movable. These legs are modified slightly for amputations through the thigh.

Dornblüth (1826) constructed an apparatus for amputations in which the stump of the leg had assumed a right-angled position. An artificial knee-joint was introduced below the knee-joint proper.

Verduyn's attempt to make the thigh the main point of support instead of the knee, was revived by Serre (Montpellier 1826). Goyraud (Aix, 1831) first used the tuber ischii as a point of support, even in apparatus for supramalleolar amputations. This was an important advance as was also the new principle introduced by F. Martin and Charrière (1842) who displaced the artificial knee joint behind the axis of the limb. Goyraud's modification involves the use of a heavy apparatus and is necessary only in double amputations or where the wearer must be on his feet constantly. For other cases a smaller apparatus, using as a point of support the thigh, tibial tuberosities or edge of patella, is still preferred. In the latter group belongs the leg made by Dr. B. Frank Palmer for himself. This apparatus consists of wood and has wooden joints, the knee-joint being eccentric. The entire apparatus is held straight by an endless chain of strong catgut. If the knee has been bent it automatically resumes its position through the action of a spiral spring. The same device is employed at the ankle joint. This was the only apparatus to receive honorable mention at the London Exposition in 1851.

William Selpho brought to this country in 1839 the "Anglesea leg" of Potts. He modified it, however, by the introduction of a rubber plate into the ankle joint to prevent jarring. The sole he also protected by rubber to secure elasticity and to prevent noise and slipping. It was Selpho who made for Dr. Palmer the prosthesis which the doctor himself much improved upon, in the manner above described. Palmer in 1846 obtained from the United States Government the first patent issued in this country on artificial limbs, and established himself as a manufacturer.

In 1836 Caroline Eichler, working upon the ideas of Pierre Baillif, devised artificial arms with which the wearer could sew, write, braid hair or play the violin. In 1844 Peetersen demonstrated before the

Academy of Sciences in Paris a man who could perform complicated movements with a pair of artificial arms.

Charrière, Mathieu and Béchard constructed for the opera singer Roger artificial arms that were very ingenious. Charrière's prosthesis was capable of pronation and supination by means of springs; in Mathieu's flexion and extension were conducted by movements of the shoulder of the sound side through the media of straps and rings.

To make artificial arms available to the poor, Count de Beaufort made them of sole leather with wooden hands. By connections to the elbow and shoulder with strings the hand was moved with these larger joints. If amputation was done above the elbow the thumb was connected by a string with the hip, forward motions of which flexed the thumb. The apparatus was a fairly serviceable one and cost but twenty-five francs.

Oscar Dalisch (Berlin, 1877) manufactured hands which, by complicated intrinsic mechanism, permitted finger movements more or less delicate. These hand mechanisms have been largely abandoned, however, and replaced by simple, but shapely, forms of wood, or better, of rubber,—the latter allowing adjustments of the fingers to positions of flexion or extension. These hand forms are removable from the rest of the prosthesis when it is desired to replace them, by a simple movement, with a hook, a tooth-brush, or a tool—these latter being the "working hands" of Mathieu.

But to return to artificial legs. The apparatus devised by Dr. Douglas Bly, of New York, was characterized by a freely moving ball in the ankle joint, movement being limited by leather straps about the joint. Soft rubber is used in all the joints to prevent jarring. The artificial leg of W. Busch-Eschbaum of Bonn introduces an artificial Achilles tendon consisting of a strong rubber band running from knee to ankle. The apparatus of Béchard offers no essential modification.

The ball principle of Bly was also used in the artificial leg made by Esmarch-Beckmann (Kiel, 1865).

Russheim (described by Hermann, Prague, 1860) used the tuber ischii as a point of support, also reintroducing fixation of the apparatus by a strap running over the shoulder of the opposite side. Motion in the knee joints is limited, and takes place at a point three inches below the true position of the joint.

Hermann (1865) substituted aluminum for steel on account of its lightness. He also made the axis of the leg fall one inch anterior to that of the thigh to give the patient the impression of walking on the whole foot instead of on the heel.

The apparatus made up to the middle of the last century was clumsy, noisy, a torture to the wearer and a disturbance to others. It was to the energy and the skill of three early American manufacturers, in particular—Selpho, Palmer and Marks—that credit is chiefly due for those refinements in mechanism and material that have made the modern American prosthesis as acceptable as it is. The labors of these and other men have placed us well in the van in this field. England has made little advance on the Anglesea leg; France adheres to the productions of Charriere and Mathieu, and Germany

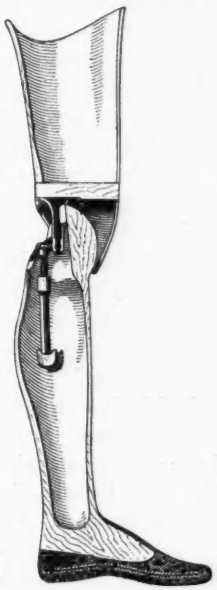

Fig. 5. Twentieth Century Artificial Leg with Rubber Foot and Spring Mattress.

to the historic arm of Berlichingen and the leg of the Verduyn pattern.

It would lead me too far afield to describe the numerous changes, made and making, in all the parts of an artificial limb. Material, construction, finish; the joints, the mechanism, the socket,—all these have been, and are being, subjected to frequent changes. One modification of recent times is too important to pass by, however. In 1860 A. A. Marks became convinced that the ankle joint was a source of weakness in the apparatus, and he cast about for a firm material that could be used instead of wood for the foot. Goodyear's process of curing rubber, just then accomplished, supplied this material and Marks *articulated* a rubber foot to the wooden leg. A few years later (1867), at a time when the Count de Beaufort leg—a simple affair of wood in which the leg was immovably attached to a 'semblance of a foot,' a rocker sole—was attract-

ing much attention, Marks fastened his rubber foot *immovably* to the leg. Aside from all other considerations, the rubber foot takes from the stump much of the shock and jar of walking. It must be remembered, too, that we use our ankles but little in level walking, and the sacrifice of a freely moving joint at that point is not so great as might appear at first blush.

Oscar Dalisch also made the ankle joint immovable, but he employed a hollow foot of hard rubber, within which was a mechanism whereby the other movements of the foot were simulated.

The socket of artificial legs has been, perhaps, the most troublesome feature to manage. The end of the stump is ordinarily too tender to bear the direct weight of the body. The conical socket is constructed to support the *circumference* of the stump by its *rim*, and the end of the stump is free from pressure. A. V. Moschcowitz has recently demonstrated* clinically that the tenderness of the stump lies not in the skin, the cicatrix, the nerves or the muscles but in the bared end of the bone; and, further, that amputations performed by Bier's osteoplastic method leave stumps that are free from all tenderness. In this operation a flap of bone, hinged to the bone stump by periosteum, is sawn from the distal segment and stitched, by its periosteum, over the raw surface of the bone or bones. A stump thus formed can be pounded on the floor as painlessly as we can our heels or fists. The principle is the same as in Gritti's amputation at the knee, or Pirogoff's at the ankle.

I have thus digressed from the history of artificial limbs because I believe it can be predicted that for those cases in which amputation has been performed by the osteoplastic method—and the cases ought to be more numerous than they are—manufacturers will have ready prostheses of which the socket will be arranged to fit the end of the stump and to receive its direct impact. I base this on the actual experience of Bier and of Moschcowitz (personal communication) with "end bearing" prostheses made for patients whose lower extremities they have amputated by this osteoplastic method.

The prosthetic art for centuries lagged far behind the surgical art. They are abreast to-day, I think, and the future development of prosthetics will depend upon, and will keep pace with, the evolution of the surgery of the extremities.

For some of the data bearing on ancient prostheses I am indebted to the personal communication of Mr. Henry S. Wellcome of London, England, from which I have freely abstracted.

*N. Y. Medical News, August 27, 1904.

# CHOLECYSTITIS.

By ROBERT WALLACE HARDON, M.D.,

Professor of Surgery (Orthopedic), Post-Graduate Medical School; Attending Surgeon, Post-Graduate Hospital; Attending Surgeon, Cook County Hospital, etc.

CHICAGO.

In view of the large amount of work which has been done in the last few years, helping to clear up many obscure conditions of the upper abdominal region, it seemed as though a consideration of the greatest cause of trouble in that region were well worth our attention at this time.

ETIOLOGY

Briefly, the trend of opinion is now that at least the large majority of cases of cholecystitis arises from infection through the portal circulation, some, however, by direct contact, some from trauma, and perhaps some by way of the common duct. The latter course has yet many adherents, but it would seem, in view of the large number of cases of cholecystitis and the small number of cases of primary pancreatic disease, not to be a frequent channel, as one would naturally expect the micro-örganism to reach the much nearer pancreas via the duct of Wirsung, if infection comes from the duodenum by tubal connection.

The bacteria most commonly found in the gall-bladder are the bacillus coli communis, typhoid bacillus, pyogenic bacteria and the pneumococcus. There is also some foundation for the supposition that the tubercle bacilli and accompanying micoörganisms are often a predisposing cause, as Kelynock, in 121 cases of cirrhosis of the liver, found 10 per cent. had tubercular peritonitis.

Infection may be carried to the liver from any part of the abdomen, from the cardiac portion of the stomach to the upper part of the rectum, as the return circulation of this entire region is through the portal system. Here bacteria not destroyed or lodged are strained out with the bile and carried to the gall-bladder, infecting it. Also, it is well established that secondary extension of abdominal malignant growths to the liver is the most common.

A gall-bladder once infected always remains so, although there may be long periods of quiescence; some exciting cause is all that is needed to fan the flame anew, causing greater destruction and danger.

The infection may exist for years without causing the formation of calculi, yet these are usually found as secondary manifestations; in-

deed, until they form and cause marked discomfort, the obscure symptoms of former years are not easily explained in many cases.

After the formation of gall stones many complications may arise. Primary malignancy of the gall-bladder itself, or of the cystic and common duct, is often a result of the irritation. Cholangitis and pancreatitis are also frequent sequelæ, most frequently when the common duct has been occluded entirely or partially by calculi or by thick viscid mucus.

Many cases of general peritonitis have also been reported as a sequel in which not only infected bile but also the gall stones have been found in the peritoneal cavity.

DIAGNOSIS

In some cases, with and without calculi, the diagnosis is a comparatively easy matter, but in many it often presents great difficulty.

*Jaundice.* Without occlusion of the common duct, or hepatic duct, for at least a time, there will not be jaundice. It may be caused by anything which will occlude the passage of the bile from the liver to the bowel, be it mucus, stone or new growth. In cases of long-continued jaundice, it should be remembered that the coagulability of the blood is much reduced and serious hemorrhage may take place if operative procedures of any kind are undertaken in this condition; before any incisions are made, chloride of calcium should be freely administered for some days.

*Pain.* This, usually a sign of calculi, is a varying symptom, and instead of being typical, extending through to about the angle of the right scapula, it may radiate to the left, be referred to the stomach, and be regarded as neuralgic or from indigestion, or it may radiate downwards into the umbilical or inguinal region. If non-malignant, the cause of pain is spasm of the bladder, with the shifting of its contents.

In a case operated upon in 1899 there was complaint at the time only of gastric pain, often relieved by emesis, but some months before, it had been both in the epigastric and in the right ovarian regions. The patient had been treated for ovarian neuralgia and indigestion. In that case there was a large hydrops of the ball-bladder, with a single free stone.

In another case, with marked jaundice, operated upon in 1904, there was no history of pain at any time, although one large gall stone was found attached to a gangrenous gall-bladder which had been almost obliterated, so little being left that it was hard to identify it in the firm adhesions which were flush with the right lobe of the liver.

*Palpation.* This may or may not elicit pain. If found, the most frequent location is below and just under the tip of the ninth rib, unless the gall-bladder is much enlarged. If not masked by protecting spasms of the abdominal muscles, it may best be found in the course of inspiration following forced expiration, when the bladder is brought down against the examining fingers,—the patient will stop inspiring suddenly and complain of pain. Occasionally shifting stones can be felt and a markedly enlarged gall-badder may be made out.

*Percussion.* Occasionally an enlarged gall-bladder can be mapped out in this manner, as was possible with absolute precision in the first above-mentioned case, where the gall-bladder extended below the level of the umbilicus.

*Fever.* If only the gall-bladder is affected, there is usually no fever unless the organ be gangrenous, as the lymphatic circulation there is very slight. With extension causing a cholangitis, one may have much or little fever, usually irregular and intermittent in character. It might suggest malaria if not charted, but when this is done there will be no regularity found in its irregularity.

In two cases, one of gangrene, above referred to, and one of empyema, the temperature chart showed no rise above 100° F. before operation. When extension involves the pancreas, the symptoms will be those of an acute or chronic pancreatitis.

Again, cholecystitis with gall stones may exist for years with so indefinite symptoms and manifestations that an absolute diagnosis is impossible. This is well shown in autopsies, where gall stones causing no symptoms noted in life have been found, and by the discovery of gall stones in examinations conducted at the time other abdominal operations are performed. In the work especially of the Mayos, seeking to discover the cause of indefinite symptoms referred to the upper abdomen, in which they have made exploratory examinations, they have frequently found the trouble to be with the gall-bladder and ducts. W. J. Mayo states that a large number of his recent gall-bladder and gall duct operations have been from this class of patients, many having only indefinite gastric symptoms, and as a result of operation they were relieved. Again, cases are now being reported where gall stones were known to exist, but, causing no unpleasant symptoms, were not removed, but later have been the

cause of cancer, inoperable, or revealed by operation at a subsequent time.

TREATMENT

Only the subacute or chronic form will be considered at this time, and the treatment is surgical as soon as probable diagnosis is made. Let me here emphasize this. An exploratory laparotomy of the upper abdomen is practically without danger, and if cholecystitis or its sequelæ are not found, and no other operable lesion is discovered, no harm is done. Not a day passes in a large city when this is not done for symptoms of the lower abdominal region. Why not of the upper? By doing this, many cases will be saved the additional danger of complications causing adhesions, cholangitis, stones in the ducts, pancreatitis and cancer. Do we wait until the abdomen is full of pus before taking out an appendix or for infection carried to the brain before draining a mastoid? Certainly not. Any physician who did would have to shoulder the responsibility for death in such cases should it occur. So in cholecystitis the feeling is coming that he who advises against the removal of the menace at a time when the danger is a minimal one, should shoulder the responsibility of increased danger later, and for deaths from delayed, complicated cases, or cancer from this cause. The keynote of operative procedure is free drainage to allow the infected matter to escape, the removal of all gall stones if any exist, and the removal of such tissue as would be a menace to the patient if allowed to remain.

Cholecystotomy is the operation of election, with free drainage (cholecystostomy).

Cholecystectomy is indicated in cases of gangrene, empyema, malignant disease, hypertrophied gall-bladder with occluded cystic duct.

In cases of severe infection of the gall-bladder, and where it has fairly normal walls, the mucous membrane may be removed, and the rest left as a natural channel for drainage.

Before opening the gall-bladder, the cystic duct and the common duct should be palpated for possible calculi, and if found, the hepatic duct should also be palpated. In order to do this, the opening must be of sufficient size to admit of the common duct being exposed to view. As in appendicitis, the opening should be a muscle-splitting one, in this case of the rectus, as a guard against subsequent hernia.

Should palpation or observation leave any doubt as to the presence of a stone in either duct, it should be opened and explored. The practice of testing the patency of ducts with water or air is distinctly bad, as by that means infected material is readily spread.

Any openings in the ducts should be drained, the drain being sutured with catgut to prevent floating. If the ducts are sufficiently dilated to explore with the finger, use it; if not, use dull exploring instruments.

Should a calculus be found in the ampulla of Vater, it may be necessary to remove it through the duodenum, in which case drainage outward from the duct should be made above.

If cholecystectomy is done, disection should be from below upward, after ligating the cystic duct and artery, so that hemorrhage will not obscure the field. In cases where natural drainage into the duodenum is not possible, because of new growths, etc., new drainage should be instituted into that part of the intestine, if possible, if not into the colon. It has been made into the stomach and into the jejunum.

CONCLUSIONS

1. Cholecystitis, if subacute or chronic, should be subjected to early operation.

2. Early operation reduces the operative mortality rate.

3. The cases of primary cancer of the gall-bladder and ducts will be greatly reduced by early operation.

4. If a probability of cholecystitis exists, an exploratory incision should be made, and if it is found, the operation continued.

5. He who advises against operation when a diagnosis has been made should shoulder the responsibility of the increasing dangers of delay.

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103 STATE STREET.

# Clinical Reports.

## AN UNUSUAL CASE OF CHOLELITHIASIS.

By JOHN N. BELL, M. D.
Gynecologist to Harper Hospital Polyclinic,
DETROIT, MICH.

Mrs. D., age 67, consulted me August 8th of this year, for frequency of urination, irritability of the urinary bladder, an uncomfortable feeling of distress in the right side of the abdomen, and general symptoms of dyspepsia. The urinary symptoms were of recent date, but the abdominal symptoms were of several years standing. She had had but one severe attack of abdominal pain, in December of last year, at which time she was confined to bed for one week. There was no history of jaundice. On palpation a well defined tumor could be detected in the right flank, hard but not nodular, slightly movable, easily separated from the liver but not from the kidney, not affected by respiration and not painful to the touch. Urinalysis disclosed nothing but an abundance of triple phosphate and oxalate crystals, which accounted for the irritable bladder and frequent micturition.

On August 10th I made an exploratory incision through the right linea semilunaris one-half inch below the costal margin and could then readily make out an immensely distended gall-bladder. Adhesions, cobweb in character, were distributed in all directions, and the right lateral aspect of the fundus of the gall-bladder was very firmly adherent to the sigmoid flexure of the colon. After incising the gall-blader and removing the immense stone here reproduced in actual size, I found three or four small openings connecting the interior of the gall-bladder with the lumen of the colon at the site of the dense adhesions, thus affording excellent drainage to the gall-bladder.

The cystic duct was packed full of smaller stones ranging in size from gravel to jackstone varieties, thus filling in the cone-shaped space from the concave end of the large stone to the apex of the duct. These were removed, the gall-bladder thoroughly irrigated with saline solution, the incision stitched to the abdominal opening and a rubber drainage tube inserted. The patient made an uneventful recovery. The drainage tube was removed on the eighth day and the biliary fistula is gradually closing.

The interesting features of the case are, the age of the patient, the excellent drainage of the gall-bladder afforded by nature, and the size of the large stone, which weighed, one week after removal, 106 grams and measured 7.5 centimeters in length, 14.5 cm. in circumference and 4.5 cm. in diameter.

## UNDESCENDED TESTICLE—REPORT OF TWO CASES.

By J. M. BATCHELOR, M. D.,
NEW ORLEANS, LA.

My reason for presenting this subject is the frequency with which this condition is encountered in operating for inguinal hernia. It is said that undescended testicle occurs once in five hundred cases, these statistics being obtained from the records of the Austrian Army. In 125 operations for inguinal hernia I have encountered this condition four times. Under such circumstances the operator is confronted with the question of what disposal to make of the organ. Formerly the habit was to remove the testicle, or to replace it within the abdominal cavity. I think this disposition of the testicle was dependent upon the fact that no satisfactory operation has been devised by which the testicle could be replaced permanently in its natural position, for most surgeons recognize the importance of replacing the testicle in the scrotum if possible. It seems to be well proved that testicles retained in the abdominal cavity are prone to undergo malignant degeneration, and that these organs, when retained, are usually functionless. When situated in the inguinal canal or near the internal ring the testicle is much exposed to traumatism, and if complicated with hernia, which is the rule, the wearing of a truss is attended with much pain and inflammation of the misplaced organ. On the other hand, there are reasons to believe that if the testicle be brought down sufficiently early in the life of the patient, development of the organ is much favored, and the chances of functional de-

velopment are vastly greater than if it be allowed to remain in the abnormal position. Aside from the dangers of malignancy, traumatism and sterility, psychological influences must receive due consideration. In one of the patients reported here mental distress, due to the absence of both organs from the scrotum, was such that the mother of the child asked for surgical interference. The operation performed on these two cases is that devised by Dr. Arthur D. Bevan, of Chicago, to whom credit is due for placing this among well-recognized surgical procedures.

Case 1.—T. B., age 23. Diagnosis, left inguinal hernia, with undescended testicle, palpable at internal ring. Hernia of eight years' standing. Testicle had occasionally entered canal, but could be easily returned, and had never caused any inconvenience. Patient had never worn truss. Operation performed October 13, 1904. The usual incision for hernia being made, the vaginal process was exposed, drawn down and divided above. Testicle ligated and returned to the cavity. The testicle and cord were then separated from attached tissues by blunt dissection up to the point at which the vas turns downward and inward, the spermatic vessels upward and outward. An attempt was now made to draw the testicle down to the scrotum. This was effectual; the spermatic vessels were now ligated at two points and divided, leaving only the artery of the vas. It was found possible after some further separation of the vas, to bring the testicle down to its normal position, a pocket having been made in the scrotum by blunt dissection, for its reception. The testicle was retained in position by means of a purse-string suture placed at the neck of the scrotum. The remaining steps of the operation were those employed in the Bassini operation, except that the cord was not transplanted.

Case 2.—B. S., age 10. Fell under my observation September 24, 1904. Diagnosis: Cryptorchism. Patient was brought by mother for relief of this condition, which had been brought to her notice by the child, who had been the object of ridicule among his companions. Examination showed the absence of both testicles from the scrotum, one of which could be palpated above the internal ring. Operation performed September 28th. An incision three inches long was made one inch above and paralled to Poupart's ligament, extending only to the external ring. The vaginal process was found to extend down the canal to the external ring, but not into the scrotum. By traction on this process the right testicle was brought into view, the process was then separated from the testicle and the cord up to the point of development are vastly greater than if it be allowed ligated above the testicle and returned to the cavity. Considerable difficulty was experienced in bringing the testicle down and this was eventually accomplished only after ligating and dividing the spermatic vessels and completely denuding the vas. It was then possible to bring the testicle down one inch below the external ring and to replace it in a very small scrotum, where it was retained by a purse-string suture. The left testicle was situated high up below the kidney. Traction on the vaginal process, which had also traversed the canal to the external ring, was of particular assistance in bringing the testicle within reach of the fingers. After much patience and blunt dissection, with division of the spermatic vessels and complete denudation of the vas, the testicle was eventually brought down and placed in the scrotum. Both wounds were closed, as in the Bassini operation, except that the cord was not transplanted, but brought out between the pillars of the external ring. Twenty-four hours after the operation the scrotum became ecchymotic and swollen, but with the application of an ice-bag this subsided and the patient was allowed to get out of bed in twenty-one days.

Both patients were examined one month after operation and the testicles found to be in place. From a consideration of the dangers existing if the testicle be allowed to remain in an abnormal position, and from consideration also of the ease and certainty with which replacement can be done, I feel justified in asserting that to cryptorchids or monorchids should be allowed the privileges of this operation. The operation should be recommended.

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## A CASE OF TUBERCULOUS OSTITIS TREATED BY X-RAYS.

By G. HAVER EVERHART, M.D.,

BALTIMORE, MD.

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This case is of interest in demonstrating the curative possibilities of the x-ray for lesions situated *beneath* the skin.

The patient, a boy of ten years, came under my care in March, 1903. His parents were healthy but his maternal aunt and grandmother had both died of pulmonary tuberculosis.

His left leg was edematous and very tender on pressure. Over the crest of the tibia was an ulcer the size of a half dollar (illustrated in Figure 1), communicating with the bone itself by a fistulous

tract, through which discharged pus and bone fragments. Fluoroscopic examination showed the tibia

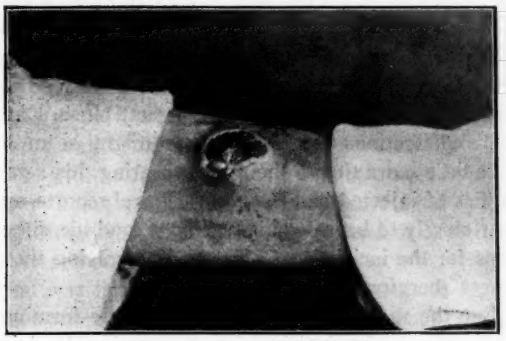

Fig. 1.

to be thickened throughout its length, and necrotic in the neighborhood of the ulcer.

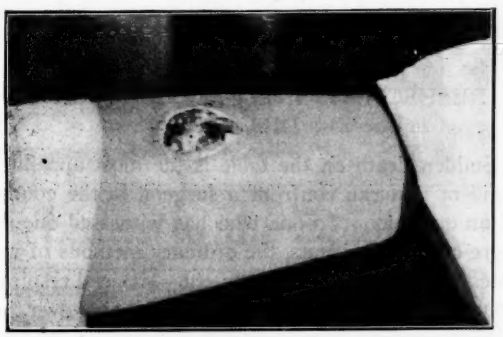

Fig. 2.

The discharge from the wound was examined, through the courtesy of Dr. Canby and the labora-

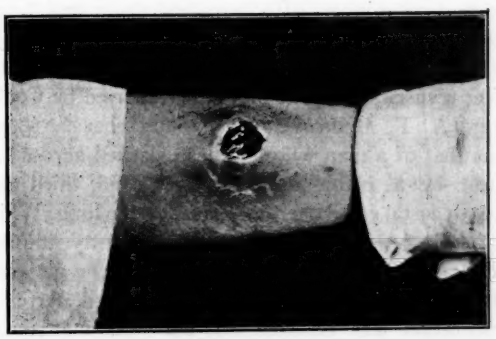

Fig. 3.

tory of the College of Physicians and Surgeons of Baltimore, and reported tuberculous.

The entire leg, well coated with vaseline, was exposed daily, for five minutes, to x-rays from a "soft" tube. After the fourteenth exposure the lesion presented the appearance shown in Figure 2, after

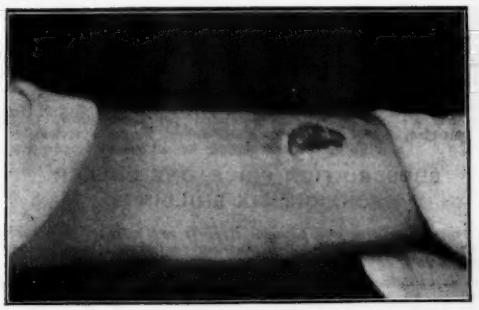

Fig. 4.

which time the treatments were given on alternate days. The steady progress towards healing is shown

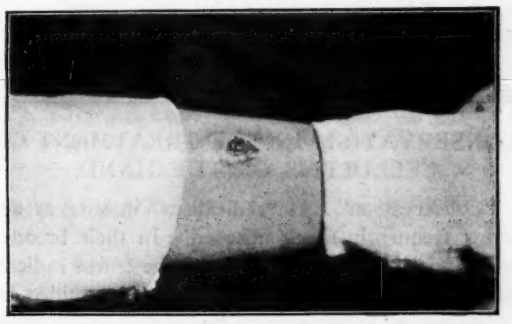

Fig. 5.

in the pictures here presented, taken at fortnightly intervals. After the forty-ninth exposure the wound

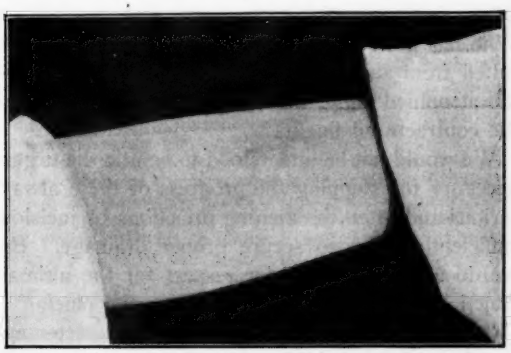

Fig. 6.

was entirely closed, and, as far as I know, it has since remained healed.

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The odor of iodoform can be largely disguised by mixing it with oil of bitter almonds.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, OCTOBER, 1905.

## CONSERVATISM IN THE TREATMENT OF CELLULITIS OF THE HAND.

"Conservatism" and "radicalism" in surgery are terms frequently much misused. In their broader sense, wise conservatism is often the truest radicalism, and *per contra,* radicalism, when guided by judgment and experience, is, by its ultimate purpose, really conservative. Conservatism, again, may be as truly bold as radicalism.

In the treatment of infections of the hand, long and searching incisions, unguided by anatomical considerations, constitute rashness—not radicalism. Who has not seen the crippled hands that have resulted from surgery more vigorous than rational—the atrophied palm, the shiny skin, the stiff joints, the contractured fingers?

We would not be understood to belittle the urgent necessity for stopping the progress of these always serious and often threatening infections by incisions sufficiently large to secure proper drainage. But we do insist that a proper respect for the ultimate function of the member must guide the placing of those incisions with reference to the character and location of the infection, and in accordance with correct notions concerning the direction in which that infection will spread and the tissues it will traverse or otherwise involve.

Most helpful to us in this particular will prove, we believe, the experimental study of acute phlegmons of the hand which was published by Allen B. Kanavel in the September issue of *Surgery, Gynecology and Obstetrics,* and which we have abstracted on another page. Kanavel describes five spaces in the palm and on the dorsum of the hand into which infections travel according to their site of origin. He also describes the paths by which infections spread beyond these spaces to surrounding structures and to the forearm. While, at first blush, Kanavel's dissections of these spaces might seem to have little more than a theoretical bearing, his x-ray studies of injected hands, and his clinical reports, appear closely to bear out his teachings, and his directions for the incisions of phlegmons involving these spaces therefore deserve our attention.

But the mere avoidance of contracture-forming, tendon-destroying incisions is not enough. The daily dressings are as important as the operative treatment. The use and selection of drains and irrigations, the character of the outer dressing, the care of the fingers and joints, all are details on which may hang the patient's ultimate capacity to earn a livelihood.

## RESUSCITATION AFTER APPARENT DEATH.

Sudden death on the table is the most appalling accident that can confront a surgeon in the course of an operation. To one who has witnessed one or more of such accidents, the ordinary methods of resuscitation as practiced at present—artificial respiration, elevation of limbs, electricity, slapping over the cardiac area, etc.,— appear rather indirect and more conservative than the desperate condition of the patient warrants. It is therefore interesting to read the reports of two recent cases in which life was brought back by means of direct massage of the heart some minutes after apparent death had taken place. In one instance the patient is still living, but in the second the patient succumbed many hours after resuscitation. The first case, reported by Conkling (*N. Y. Medical Journal,* September 2, 1905) was that of a man who had been slashed across the chest by a razor, dividing the second, third and fourth costal cartilages and exposing the lung. While the wound was being sutured, and twenty minutes after the anesthesia had been stopped, the patient's respiration and heart beats suddenly ceased. Artifical respiration was resorted to but was ineffectual. About two minutes after apparent death had occurred Conkling introduced his hand into the wound and massaged the patient's heart in a rhythmical manner; at the end of about forty to sixty seconds the heart began to beat. The suture of the wound was completed and the patient made an uneventful

recovery. The second case, reported by Gray (*The Lancet*, August 19, 1905), was that of a woman who was brought into the wards suffering with intense dyspnea from what ultimately proved to be a carcinoma of the larynx. Before a contemplated tracheotomy could be performed the patient was reported dead. Gray performed a hurried tracheotomy with a pen-knife but, as in the previous case, artificial respiration was ineffectual. He then performed laparotomy, again with a penknife, and massaged the heart through the diaphragm. At the end of fifteen to thirty seconds the heart again began to beat, respiration was inaugurated, and the patient lived for fourteen hours. Gray calculates that about ten minutes must have elapsed from the time the heart stopped until it began to beat again. It is altogether probable that the patient might have lived longer had she been in a better condition. As a method for resuscitation after apparent death, the second method appeals more strongly than the first, although we must remember that in Conkling's case the avenue for manipulation had already been made. At all events these two cases show that perhaps a few more lives may be saved in the future in cases that have hitherto been regarded as hopeless. E. M.

# Letters to the Editor.

[The publication of letters to the editor does not imply that he is in accord with the opinions expressed therein.]

## ON THE EMPLOYMENT OF SCOPOLAMINE.

3908 OLIVE STREET,
ST. LOUIS, MO., September 6, 1905.

*To the Editor of* THE AMERICAN JOURNAL OF SURGERY:

*Ex cathedra* promulgations, such as those made by "R. T. F." in your September review of recent articles on scopolamine, usually work to the detriment of the science of medicine, unless the statements carry with them the weight of evidence. And by evidence, I mean either a carefully considered critique of the method recommended or condemned, or the presentation of the results of personal experience.

If "R. T. F." has had experience with scopolamine, he carefully refrains from stating it; and as for a carefully prepared brief based on the literature, he has seen fit to draw his deductions from six articles (two of them abstracts). I do not desire to enter into a discussion regarding the toxicity of scopolamine, for I took that up rather *in extenso*, in my article in the August number of the *Annals of Surgery*, admitting that scopolamine was not an inocuous plaything. In passing, however, I may remark that two of the cases quoted by your reviewer as ending fatally, owing to scopolamine administration, proved at autopsy to have endocarditis and atheroma of the aorta, in one case, and endocarditis and adhesive pleurisy in the other. Both these cases received a much larger dose of scopolamine than I have recommended, and both of them were narcotized with chloroform.

In my own hands, a small (gr. 1/100) dose of scopolamine has proved to be a most valuable adjuvant to general anesthesia. In a series of sixty-five cases, I saw no untoward symptoms, and Hartog, in his series of seventy-five similar administrations, met with the same results. Since the dosage of scopolamine has been reduced, there is not a single case of death on record that can be charged undeniably to the account of scopolamine; and with the exceptionally small dose of one-hundredth of a grain, it is hoped that none will be encountered.

If, however, such an eventuality as death from one-hundredth of a grain of scopolamine is possible, we ought to be in possession of the fact. I do not cavil at "R. T. F.'s" condemnation of the drug, but rather at his one-sided presentation of facts. It seems hardly fair for him to "presuppose" as he does, for, in clinical medicine there is, as a general rule, but little place for presupposition.

Very truly yours,
M. G. SEELIG, M.D.

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[The essential fact that fourteen deaths in some 1,500 anesthesias have occurred during the use of a method, *the avowed purpose of which is to avoid the dangers of general anesthesia or to replace the latter where general narcosis is contraindicated*, it will be difficult "to explain away," even if the reports of two fatal cases are taken from abstracts.

The *ex cathedra* remarks to which Dr. Seelig takes exception were based upon the reviewer's experience in some 2,500 cases of general anesthesia (of which nearly 500 were personally administered), and in which, exceptionally, when necessary, a small dose of morphine was found sufficient to bring about all the results claimed for the scopolamine-morphine combination by Seelig, except the minimizing of post-operative vomiting. The reviewer feels obliged, therefore, not only to reiterate his general warning against the drug, but also again to doubt the *raison d'être* of its use as an adjuvant.—R. T. F.]

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## ON THE REMOVAL OF NORMAL APPENDICES.

312 HUSTED BUILDING.
KANSAS CITY, KANSAS, September 15, 1905.

*To the Editor of* THE AMERICAN JOURNAL OF SURGERY:

In reading over the article of Dr. Channing W. Barrett on "The Appendix and its Relation to Pelvic Disease" in the last issue of the JOURNAL, I am surprised at the narrowness shown in one part of the article.

On the whole, the paper was an instructive and interesting one. The relation between the two areas, when pathological, is a very intimate one as pointed out by Dr. Barrett. But the point I would like to enter a dispute upon is, "whether a normal appendix should be removed at the time of other operations." He compares this operation to the removal of one normal toe while operating on another, for fear the normal one might, in time, become bitten by a rattlesnake; and he makes other, similar, comparisons. Such reasoning is folly, time-killing and a waste of valuable space in a journal.

I have no criticism for his idea, if he really believes it. I think exactly the opposite. Let me cite cases seen every day in the operating rooms of any large hospital. In taking out an ovarian cyst under easy circumstances, in operating on an inguinal hernia, with an appendix protruding into the wound, perhaps, in doing a ventrofixation of the uterus or any other of the one-half hour or one hour operations where the patient is in good condition, is it not more of a mistake to leave a Clarke's "culture tube" in the abdomen for future danger (and it is no small one either when we consider the large number of appendicitis cases) than to rapidly remove it by one of the many quick, simple and safe methods of to-day?

I am not in favor of human vivisection, as the doctor puts it, but it seems to me that it is just as legitimate to remove a normal appendix, which has no known function, and under the circumstances mentioned, as it is to inject a prophylactic dose of antitoxin into the healthy children of a family when one or more have the diphtheria.

The appendix is a law unto itself and cannot be compared to toes, gall-bladders and the like.

Yours respectfully,
HUGH WILKINSON, M.D.

# Surgical Suggestions.

Nitrous oxide narcosis can, in most cases, be continued "smoothly," with no cyanosis and with fair degree of relaxation, even for an hour. A laparotomy may be thus performed, if ether and chloroform are contraindicated. To secure such a narcosis it is best to use an apparatus that permits exhalation into the gas bag, and which has a valve for the admission of air. The bag should not be distended fully. After brief air and gas administration, air is turned off and the patient breathes $N_2O$ and his own $CO_2$. At short intervals, and whenever there is any cyanosis, a single breath of pure air is allowed.

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During narcosis, when stertorous breathing calls for extension of the jaw, it is well to hold it forward first on one side, then on the other, alternating at short intervals. Long, continued pressure at the angle or angles of the jaw produces much soreness. Often the jaw can be kept forward by catching the lower incisor teeth in front of the upper ones (if they are strong); a single finger on the chin is enough to maintain this position.

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Warming a laryngeal mirror prevents condensation of the breath upon it only for a short time. The mirror will remain bright, however, throughout a prolonged examination if, instead of warming it, its surface is smeared with an invisible film of soap.

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When scissors become "catchy" their edges can often be surprisingly smoothed by carrying each blade repeatedly from lock to tip between the firmly pressing thumb and forefinger. Each kind and size of scissors has its own capacity, and should be used only for what it is intended. Opthalmic instruments are not intended for ordinary dissections, tissue scissors should not be used for cutting bandages, nor bandage scissors for plaster of Paris.

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A scroll-saw, with an assortment of a dozen saws, can be purchased at the hardware store for twenty-five cents; it is ideal for resection of the small bones of the hand and foot, for amputations of the digits, etc. Well tempered carpenter's chisels and gouges, and a carpenter's wooden mallet answer the purpose admirably for bone work. A useful bone drill can also be selected from the stock of the hardware dealer. A gardener's pruning knife and a carpenter's miter saw are the best tools for the removal of plaster dressings. A cheap potato knife, rough sharpened on a stone, is excellent for cutting through starch bandages. Crochet needles are most useful for lifting buried stitches out of a sinus.

Knitting needles find another purpose as a means of rupturing the membranes when this is needed in obstetrical work. Sharp and blunt retractors may be fashioned, in an emergency, by bending the tines of a fork and the handle of a spoon, respectiveiy. A teaspoon is also useful as an elevator of the eye, when resection of the superior maxilla is performed. An inverted tea-strainer is useful in the dressing after colostomy, to prevent pressure of the gauze upon the gut. A spoon-shaped potato cutter may be used, in an emergency, as a wound curette. Similarly, applicators, probes and depressors may be improvised by twisting stout copper wire. The multiple surgical uses of the hairpin are also well-known. Of stouter material, if necessary, a small self-retaining speculum can be quickly made from steel wire; it often obviates the need of an assistant when searching the hand or foot for a foreign body.

A wedge of hard wood makes a gag quite useful, often, when administering anesthesia. A discarded thermometer case (or a hard rubber douche point) is a serviceable handle in which to mount, with candle grease or adhesive plaster, a stick of silver nitrate. Steel spring tape-measures are better than the wires generally sold for the purpose, for conducting to an x-ray tube the current from the coil or static machine; easily kept taut, and quickly adjusted, they are safest for the patient and most convenient for the operator; that they are not insulated is inconsequential—the coverings on the regular wires do not insulate the induced current. Cheap powder blowers, such as are used for insecticides, may be employed as insufflators in surgical work, and pepper boxes are useful for dusting powders.

Wooden skewers are serviceable nail-cleaners. Rolling pins and kitchen towel racks are very convenient for adhesive plaster, rubber tissue, etc., especially for hospital dressings. Grocers' bags are the most serviceable receptacles for soiled dressings. Tar-paper is a smooth, fairly waterproof material to tack on the floor when preparing a room for operation.

# Book Reviews.

**Hyperemia as a Therapeutic Agent.** By PROFESSOR DR. AUGUST BIER, University of Bonn. Authorized translation, edited by DR. GUSTAVUS M. BLECH, Consulting Surgeon, People's Hospital, Chicago. 12mo; 239 pages. Chicago: A. ROBERTSON & CO., 1905.

At this time, when Bier's hyperemia treatment as applied to acute inflammations of the soft parts, is attracting much attention, this translation is very opportune.

Bier's treatment of tuberculous, gonorrheal, and other forms of arthritis by the "stasis bandage," is familiar to all surgeons; but by those who have not read his monograph in the original this translation will nevertheless be welcomed, since it clearly explains, on a physiological basis, the rationale of hyperemia as a therapeutic agency.

The author's experience extended over more than a thousand cases before he undertook its publication in the form of a monograph. The work is therefore practical as well as philosophical.

One brief chapter on the treatment of acute inflammation of the soft parts, based on successes with thirteen cases of endemic facial erysipelas and with several cases of phlegmon, foreshadows the recent publications from Bier's clinic referred to editorially in the September issue of the AMERICAN JOURNAL OF SURGERY. Two practical points are mentioned in this chapter, both of which should be noted by all who are trying Bier's method in dealing with acute surgical infections of the soft parts. The first of these is that much patience must be practised in order to secure "the right kind of hot stasis, without also producing pain." The second is that "the greatest mischief can be produced with the remedy in progressed cases of phlegmon of the soft parts."

Dr. Blech, who has himself contributed much to the literature of this mode of therapy, has performed a distinct service in translating the thesis of its father.

**The Psychic Treatment of Nervous Disorders.** By DR. PAUL DUBOIS, Professor of Neuropathology, University of Berne. Translated by SMITH ELY JELLIFFE, M.D., Ph.D., and WILLIAM A. WHITE, M.D. 8vo. Cloth. 471 pages. New York and London: FUNK & WAGNALLS CO., 1905. $3.00 net.

The motto of this work may be summed up in its concluding words: "Let one display the legend, 'Master of thyself' and patients will follow it to victory." The author explains in another part of the work, "The means to this end is the education of the *will* or, more exactly, of the *reason*."

In this book DuBois places the treatment of those nervous disorders that have no material pathological basis on a sound, psychological foundation. He condemns the practice of many physicians who immediately prescribe bromides or seek to correct uterine displacements, etc., when confronted with a case of "nervousness," neurasthenia or similar functional disorder. DuBois eschews drugs entirely. It is interesting to note that his psychic methods are not those of deception; on the contrary, he tells the patient in plain words that his trouble is a nervous one, and that he can cure himself by controlling his will, explaining both the condition and the method of treatment, according to the patient's intelligence. In addition, he employs very largely the Weir Mitchell treatment of rest in bed, isolation and over-feeding.

All specialists often see, and all general practitioners are frequently called upon to treat, these unfortunate cases of hysteria, neurasthenia, "nervousness," mild melancholia and hypochondriasis. Many of these cases, it is all too true, are allowed to become miserably chronic and to shift, unrelieved, from doctor to doctor, from doctor to quack, consuming quantities of nerve tonics, sedatives, intestinal antiseptics and what not, and undergoing all varieties of electrical, hydrotherapeutic and other physical applications. Professor DuBois' impeachment is an honest one and much deserved. The ailments are psychic and the treatment should be psychic. Practitioners are all too prone to dismiss with a prescription, or to indifferently regard as hopeless, their troublesome neurasthenic patients.

No reader of this book can fail to be convinced that the door of hope will be opened to these patients when the druggists' door is closed to them, and that by tactfully, even gradually, educating them to an understanding of their condition, a cure can best be established. The work is, moreover, most interesting reading, and its charm of style has not been lost in the excellent translation.

**Superstition in Medicine.** By PROF. DR. HUGO MAGNUS. Authorized Translation by Dr. Julius L. Salinger, Physician to the Philadelphia General Hospital, etc. New York and London: FUNK & WAGNALLS CO., 1905.

To the physician interested in the things correlative with his profession, this little work will especially appeal. It is a learned dissertation on the influences which religion, the natural sciences and philosophy have exerted upon the superstitions which surrounded the cure of disease in the centuries preceding the nineteenth. The data are well presented and tersely narrated, while the work has lost nothing in its renditon into English.

It is interesting to note the similarity of claims and allegations of miraculous cures in, let us say the eleventh century, and those of the present day accomplished at Lourdes and by the various faith cures. If we have become more enlightened as to the natural sciences and their modes of action, a perusal of the book under review will convince one that "we are children still in our understanding."

**Manual of the Diseases of the Eye.** *For Students and General Practitioners.* By CHARLES H. MAY, M. D., Formerly Instructor in Ophthalmology, N. Y. College of Physicians and Surgeons; Ophthalmic Surgeon to the City Hospitals, Randall's Island, N. Y.; Adjunct Ophthalmic Surgeon to Mt. Sinai Hospital, N. Y., etc. FOURTH EDITION, revised. 12mo.; 391 pages; 360 illustrations. New York: WM. WOOD & CO., 1905. Price, $2.00.

This little volume has met with remarkable success. The three preceding editions have undergone several reprints; the work has been translated into German and Italian, and adapted to British needs; and it is to-day the favorite text-book in a very large number of colleges, here and abroad.

Dr. May had been teaching ophthalmology to medical students for ten years when he began the preparation of the book for which both this pedagogic experience and an excellent power of literary expression well fitted him.

Complete within itself and more comprehensive than compends and quiz-books, Dr. May has kept his work within the strict limits of a student's manual, despite the temptation of its great success to expand it beyond the purpose for which it was conceived.

This edition shows several changes in the text. Many new illustrations will be found, among them eight plates bearing numerous well drawn and splendidly colored illustrations of certain diseases of the eyeball and eyelids.

**The Doctor's Recreation Series.** CHARLES WELLS MOULTON, General Editor. Volume X. THE DOCTOR'S DOMICILE. Edited by I. ARTHUR KING. Akron, Ohio: THE SAALFIELD PUBLISHING CO., 1905.

This is an interesting contribution to an entertaining series. The title of the book scarcely betrays its contents, which in character and general arrangement are much like those of other volumes in the series. Over two hundred pages are devoted to an excellent selection of short stories, gathered from various authors, many of them standard. Following these are forty pages of jokes on, or about, the doctor. Interspersed with the stories, and also occupying the last ten pages of the work are several poems—some humorous, some sentimental.

# Progress in Surgery.

## A Résumé of Recent Literature.

**Brief Extracts from the Reports of the German Surgical Society, 24th Meeting.** For fuller report see *Zentralblatt für Chirurgie*, No. 30, 1905; supplement.

Among the numerous subjects discussed, several topics are of general interest and are therefore very briefly abstracted below. Most of the papers read at the meeting will probably be published later in a more complete form.

BIER again spoke of his method of *passive hyperemia*, by means of constrictive bandages and suction apparatus, in acute inflammatory conditions. (See Editorials, AMERICAN JOURNAL OF SURGERY, September, and Book Reviews, this issue.)

HEILE showed that *autolysis* is an active healing factor. The intracellular enzymes, especially those contained within the leucocytes, can be liberated by exposing the affected area to the x-ray or by causing a passive hyperemia (Bier). If, through local chemotactic measures, the leucocytes are increased in number, at the affected area, the resulting x-ray treatment will prove more efficient.

HEINECKE demonstrated a *selective action of the x-rays* upon white cells of the bone marrow and the cells of the lymphoid tissues. Guinea-pigs exposed for ten hours continuously to the rays, showed marked destruction of the leucocytes. If the animals survived, regeneration was complete in 2½-3 weeks. This capacity for rapid regeneration probably accounts for the incomplete results and early relapses in the x-ray treatment of leucemia.

A GENERAL DISCUSSION on *the present status of spinal anesthesia*, in which statistics from over 1,200 cases were used, showed a consensus of opinion favoring the substitution of stovaine or tropacocaine for cocaine. The addition of paranephrin or suprarenin prevented general collapse, but did not lessen unpleasant after-effects. Solutions, such as gelatine, which retard absorption, perhaps have the same effect. Only as much spinal fluid should be removed as will be replaced by the solution. Trendelenburg's position increases the risk of intoxication and cerebral symptoms. The spinal method should not be used in patients younger than 16; old, decrepit and debilitated individuals are especially favorable subjects. Operations on the lower extremities, perineum and rectum are most readily performed. No fatalities, few severe collapses, but many cases of prolonged headache are recorded.

LAUENSTEIN advocated the impregnation of gauze used in packing wound cavities, with *sterilized liquid vaselin*, which prevents adhesion to the granulations and takes the place of rubber tissue. This method is of most use in tamponing large cavities in which rubber tissue cannot be employed.

KÜMMEL has trephined not only in cases of circumscribed suppurative meningitis due to ear disease, but also in *tuberculous meningitis*. In a case of the latter, the headache and fever were improved though the outcome was fatal. One case of *traumatic meningitis* (pus found by lumbar puncture) was cured by bilateral trephining of the parietal bones, with gauze drainage. Complete recovery followed.

ROSENBACH ascribed the high *malignancy of furuncles of the face* to the anatomical relations of the facial muscles of the skin and subcutaneous tissue, which facilitates the expression of the bacteria into the tissue spaces. Early and liberal incision is called for.

FRIEDENHEIM reported 20 cases of *Basedow's disease*, of which 70 per cent. were cured by enucleation or resection of the thyroid. The chief difficulty lies in determining the proper amount of gland to be removed. Kocher emphasized the fact that early operation is desirable.

GARRÉ advised a large thoracotomy opening (permitting introduction of the entire hand) *for injuries of the lung with hemorrhage*. The lung tissue should be sutured, the pleura drained. Large lacerated wounds require "exteriorization" (anchoring into the thorax wound).

MADELUNG read an extensive paper upon *post-operative prolapse of the abdominal viscera*, based upon 157 cases (13 from his own experience). Most cases occur after median laparotomies below the umbilicus; the "critical days" are the 8th and 9th. The use of too easily absorbed catgut has been to blame, but most of the cases occurred in spite of careful layer suture. Coughing and vomiting are the chief local, general debility or cachexia, the constitutional, causes. The patients suffer little pain; they feel as if the belly had opened. Too active interference is to be avoided; gradual replacement is preferable. The mortality reaches 22 per cent.

A GENERAL DISCUSSION concerning *pneumonia after laparotomy* showed a great diversity of opinion. In many thousands of cases about 1 per cent.-5.5 per cent. were affected. The depth, duration and perhaps variety, of narcosis, with general constitutional factors, such as alcoholism, obesity, etc., probably aided aspiration pneumonias. Embolic pneumonias were rarely verified by anatomical findings. No agreement as to the respective merits of ether, chloroform or scopolamine-morphine were reached.

The *proper time for intervention in appendicitis* brought forth an almost unanimous opinion in favor of early operation (within the first 24-48 hours). All agreed that leucocytosis and general symptomatology were uncertain and misleading. The majority favored incision of abscess, in the later stage, and subsequent secondary appendicectomy. (CZERNY advocated immediate radical removal.) Peritonitis justifies operations at any stage.

PAYR and MARTIN showed perforated magnesium plates used to afford a support in *suturing wounds or incisions of the liver* or other parenchymatous organs. Sutures pass through two plates which compress the intervening tissues and prevent the stitches from tearing out.

*Prostatectomy* is becoming more popular in Germany, but has not been as fully tried as in America. Both routes, suprapubic and perineal, and also the Bottini operation, are in vogue.

ROVSING spoke at great length upon the *indications and results of nephrectomy, particularly in tuberculosis of the kidney*. He pleads for complete nephrectomy even if only a small part of the kidney is affected. After finding that extensive tuberculosis of the bladder is curable with repeated injections of 5 per cent. phenol solutions (100 c.cm., at 38 degrees C., retained for five minutes) he no longer considers this condition a contraindication to nephrectomy and he likewise operates in the presence of genital tuberculosis (radical extirpation of the affected genital organs). In determining the functional capacity of the other kidney Rovsing found blood *cryoscopy* particularly misleading, the *phloridzin* test almost equally uncertain, and the determination of the *urea* excretion the quickest, simplest and surest of the methods. On the whole, *absence of albumin, blood and microbes* from the catheterized urine of the supposedly healthy kidney is the best guide. "Kidney death," in any event, is infrequent after nephrectomy! If widespread bladder tuberculosis prevents the obtaining of definite findings, *exploration of both kidneys* by lumbar nephrotomy is indicated. *Segregation* should be abandoned; it is misleading. Rovsing's mortality has fallen from 13.2 per cent. to 3.3 per cent.

ISRAEL agreed as to the uncertainty of functional methods and credits improved statistics to earlier operation and ureteral catheterization, to assure the presence of the second kidney. The urine of the healthy kidney can be inoculated into animals and thus tested for tuberculosis.

The majority was in favor of open treatment of *fracture of the patella* if there is separation of the fragments. Of 321 cases, operatively treated, the death rate was less than 1 per cent.; of 223 cases expectantly treated nearly 3 per cent. died. R. T. F.

**Serum Therapy in Erysipelas. Results in Thirty-three Additional Cases.** JAMES C. AYER. *Medical Record*, August 26, 1905.

In the hands of Ayer the use of antistreptococcous serum in erysipelas has shortened the period of convalescene from 9.4 days to 6.8. There was a general amelioration of all the subjective symptoms, and a diminished tendency to albuminuria. Three cases died. The variety of serum used is not stated.

**An Anatomical, Experimental and Clinical Study of Acute Phlegmons of the Hand.** A. B. KANAVEL. *Surgery, Gynecology and Obstetrics,* September, 1905.

By means of injection methods and dissections Kanavel has investigated the fascial spaces in the hand, and studied the avenues along which pus burrows when infection has taken place. The five spaces met with are:

"*First,* the dorsal subcutaneous, which is an extensive area of loose tissue, without definite boundaries, allowing pus to spread over the entire dorsum of the hand.

"*Second,* the dorsal subaponeurotic, limited upon its subcutaneous side by the dense tendinous aponeurosis of the extensor tendons, upon the deep side by the metacarpal bones, having the shape of a truncated cone, with the smaller end at the wrist and the broader at the knuckles. Laterally the aponeurotic sheet shades off into the subcutaneous tissue.

"*Third,* the hypothenar area, a distinctly localized space.

"*Fourth,* the thenar space, occupying, approximately, the area of the thenar eminence, to the flexion-adduction crease of the thumb, not going to the ulnar side of the middle metacarpal. It should be remembered that this space lies deep in the palm, just above the adductor transversus.

"*Fifth,* the middle palmar space, with its three diverticula below along the lumbrical muscles, limited by the middle metacarpal bone upon the radial side, and separated from the thenar space by a partition which is firm everywhere except at the proximal end, where it is rather thin. A small isthmus can be found leading from the proximal end of the space under the tendons and ulnar bursa at the wrist up into the forearm."

The infections showed, with but few exceptions, the staphylococcus in pure culture. Minor infections beneath the derma rupturing beneath the epidermis are not uncommon and are of a low grade of intensity. Kanavel takes up in great detail the spread of infection according to the location of various injuries, the pathology, symptomatology and prognosis. He advocates early incision and drainage with hot, wet dressings. Simple incisions suffice for dorsal subcutaneous and subepidermal abscesses. To drain the *middle palmar space* a through and through incision in the metacarpal space between the middle and ring finger is least harmful, and most effectual just where the middle palmar crease crosses the space. The *thenar space* is best drained by a through and through incision located on its palmar aspect in the metacarpal space to the ulnar side of the muscle mass of the thumb and emerging dorsally in the middle of the space at the level of the metacarpo-phalangeal joint of the thumb. To drain the *subaponeurotic space* longitudinal incisions over the interosseous spaces are advised. Infections spreading into the *forearm,* under the annular ligament, will have the pus on the pronator quadratus and are best incised laterally, just anterior to the radius, about three inches from the wrist, an artery forceps being pushed between the flexor profundus and the bone.

Wet dressings are used only until progression has ceased. Elevation, forced manipulation to prevent adhesions, and active motion are later indicated.

Many anatomical dissections are illustrated to elucidate the description of the study undertaken, while skiagrams of injected hands are also presented to show how pus burrows, according to the site of the infection, into one of the five "spaces" determined by dissection and clinical observation.

**Bilateral Parotitis Following Confinement.** MONTGOMERY RUSSELL. *Northwest Medicine,* July, 1905.

The occurrence of this complication after confinement is rare and may appear very puzzling until it is known that parotitis is not an infrequent complication of disease of the abdominal or pelvic viscera, and especially after operation for such conditions. Ovariotomies are the most frequent cause; next in frequency are operations for perforated gastric ulcer. The parotitis usually appears from the next day to two weeks after operation. Suppuration may take place if there are any septic features to the case.

**The Treatment of Surgical Infections with Phenol Camphor.** (*Ueber die Behandlung von Chirurgischen Infektionen mit Phenol Kampfer.*) V. CHLUMSKY. *Zentralblatt f. Chirurgie,* No. 33, 1905.

The author has used for 5 years a fluid composed of pure carbolic acid and camphor. The mixture is an oily fluid poorly soluble in water, readily soluble in alcohol, with a strong camphor odor, and *not caustic.* In recent cases of erysipelas the affected area is painted 2-5 times daily with the fluid and covered either with cotton soaked in it, or with a plain wet dressing. Phlegmons, panaritia and pustules are similarly treated, after incision, if pus has already formed. Large abscess cavities are packed with gauze impregnated with the solution, 30-50 grams being used without any symptoms of poisoning. Suppuration is rapidly cut short, only a mucoid discharge remaining. Trial of this drug in tubercular sinuses, lymphangitis and furuncles has also proven satisfactory.

As the camphor evaporates rapidly (if the bottle is not tightly stoppered) and a slight caustic effect is then produced, the author now uses the following formula:

℞ Acidi carbolici purissimi..... 30, 0
Camphorae tritae ..... 60, 0
Alcoholi absol. ..... 10, 0
M. S.: For external use.

**La Chirurgie enseignée par la Stereoscopie.**

A unique work is in preparation by Drs. P. Camescasse and R. Lehman, in which it is intended to assist the teaching of surgery by means of stereoscopic plates. The work will consist of ten separate parts, each devoted to a single operation. The text will be very terse—merely enough to relate the anatomical considerations, the steps of the operation and the instruments needed.

While the stereoscopic pictures might be printed on paper, the publishers, J. B. Baillière et Fils, Paris, have given the preference to glass.

The experiment will prove of interest to teachers of surgery. Stereoscopic pictures, however vivid, cannot, of course, replace clinics, but they can be made a valuable adjunct to them, as a reference by means of which the student can determine certain details that he may not have seen in the amphitheater or refresh his memory concerning others that he had forgotten. The series will be far too expensive for students themselves to buy. Perhaps, too, each clinic that adopts this aid to instruction will prefer to prepare its own stereoscopic plates.

**Surgery of the Stomach from the Standpoint of the Clinician.** A. J. OCHSNER. *Canadian Journal of Medicine and Surgery,* August, 1905.

Ulcer of the stomach most often, of gastric conditions, demands intervention. Indications are: 1, pain; 2, to control (a) acute, (b) chronic hemorrhage; 3, to prevent secondary conditions such as (a) perforation, (b) peritoneal adhesions, (c) pyloric obstruction from cicatrices, (d) hour-glass stomach, (e) dilatation from obstruction, (f) starvation, (g) implantation of carcinoma in the ulcer.

Of the symptoms, pain and hyperchlorhydria (with its train of dyspeptic symptoms), blood in the feces, etc., should be noted. Relapses after medical treatment are common. From a differential point of view, gall stones, renal calculi and duodenal ulcer are most important. He shows the vicious circle by which the ulcer causes, successively, spasm, retention, dilatation, etc., each relapse aggravating the condition. Of the operative methods he prefers gastro-enterostomy by the McGraw elastic ligature. Perforation demands immediate operative intervention; hemorrhage should be treated palliatively. The sequelæ—strictures, etc.,—are best cured by gastro-enterostomy or Finney's pyloroplasty. He concludes with advice to avoid unnecessary trauma when operating, and with hints as to feeding, for which the reader must refer to the original article.

**Deflections of the Nasal Septum.** *A Critical Review of the Methods of Their Correction by the Window Resection, with a Report of 116 Operations.* OTTO T. FREER. *Annals of Otology, Rhinology and Laryngology,* June, 1905.

The conclusions arrived at are the following. 1. The appearance of deflections does not divide them naturally into two great groups with distinct aspect, one obviously traumatic and the other due to faulty growth, as is taught by Killian. To consider etiology in this way in the description of deflections is merely confusing and it is better, as heretofore, to group them according to their shape. 2. The window resection is adapted to children, but the chance of a possible recurrence demands a very complete removal of the vestiges of the deflection. 3. The firmness, and, therefore, probably the cartilage and bone of the septum themselves is completely or nearly completely reproduced in the window after the resection. 4. Cases seen one and a half and two years after the operation show permanency of the result. 5. Although the author has never seen a sinking in of the nasal bridge after the window resection, Müller's and Menzel's warning should be heeded to retain a strip of the cartilage of the septum under the lateral cartilages of the external nose. 6. The lower portion of the quadrilateral cartilage as high as the level of the alae nasi, may be resected without fear, from its anterior free border horizontally back to the bone. 7. The recumbent position is the best except when operating along the nasal floor. 8. The Kirstein light is the most suitable one. 9. The use of powdered cocaine, applied with a swab, gives a perfect and safe local anesthesia, and the submucous injection of cocaine is needless except at the very front of the septum. 10. The best access to a deflection for its resection is obtained by mucous membrane incisions along its vertical and horizontal crests, and not by means of a buttonhole cut in front of it, such as is made by Killian and others. 11. The separators used for the elevation of the mucosa should be thin, curved, and either dulled or knife-edged for dissection. 12. The presence of a nasal angle in an instrument complicates its movements and makes it necessary to hold it with stiff wrist and fingers, thus sacrificing the accuracy and lightness of motion belonging to straight instruments. 13. It is better to make the first cut through the cartilage with a keen, thin, round-bladed knife than with a thicker sharp edge, which scratches through. 14. Even when proceeding subperichondrially, the elevation of the mucosa is apt to encounter adherent places that need separation by keen dissection. 15. The cutting out of denuded cartilage is the easiest part of Freer's operation. 16. With the exception of fragments cut with the chisel from the crista incisiva, or the anterior part of the vomer, neither cartilage nor bone should ever be broken, twisted or torn from its attachment, but should always be cleanly cut away. 17. Freer's modification of Gruenewald's punch forceps has proven the best instrument that he has used for resecting bone, as it is slender, long and yet easily cuts through the thickest bone encountered. 18. There is a tendency to hasty and incomplete removal of the bony part of the deflection. 19. Sewing is needless. 20. Strips of lint impregnated with subnitrate of bismuth make the best tampon. The author introduces the strips in layers so that the flaps are held perfectly in place. 21. Considering the many difficult bony resections met with, Freer does not think that the operation can be well done in 20 minutes, the estimated time of Killian.

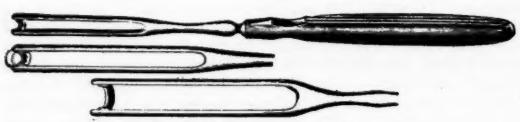
**The Submucous Window Resection of the Nasal Septum.** G. KILLIAN. Translated by E. E. FOSTER. *Annals of Otology, Rhinology and Laryngology,* June, 1905.

The author premises his remarks upon the operative technic by stating that he believes that most of the deformities of the nasal septum have their origin from an injury.

His technic in brief is as follows: First of all, thorough asepsis. In the choice of anesthesia submucous infiltration with cocaine and adrenalin is preferred. The incision is begun ½ cm. behind the lower portion of the movable edge of the septum, and extends obliquely upwards to a point about 1 cm. behind the upper portion of the septum. The elevation of the mucous membrane is now accomplished on one side. In order to attack the opposite side, Killian, under control of the little finger in the nostril, cuts through the cartilage with his sharp elevator. After the mucous membrane is elevated on both sides and separated by means of the author's speculum, the cartilage is resected. This is done with a special septal cartilage knife of the author's own construction. After the mucous membrane and periosteum have been elevated, the vomer and perpendicular plate of the ethmoid are attacked with chisel and forceps. As much of these parts is removed as projects beyond the median line. The wound between the mucous membranes is thoroughly cleansed, and the two layers are smoothly approximated against each other. No suturing is considered necessary unless there has been a complete perforation or much injury to the mucous membrane. A special needle bent like a retractor is used for this purpose. Killian tampons both sides and then puts the patient to bed. The tampon remains two days and is then removed. If the place where the incision was made is gaping, it is treated as an ordinary wound. The patient is discharged after a day or two.

**The Submucous Resection of the Nasal Septum. A New Technic with the Author's Swivel Knife, Reducing the Average Time of the Operation Several Minutes.** W. L. BALLENGER. *Annals of Otology, Rhinology and Laryngology,* June, 1905.

After describing his technic, which in regard to the incision follows at times that of Hajek-Menzel, sometimes that of Killian, at other times that of Freer, according to the condition found in the septum, Ballenger dwells upon the use of what he calls his swivel knife, for the removal



Ballenger's Swivel Knife.

of the cartilaginous portion of the septum. The advantages of his method of operation are:—

1.—It promises to be the most speedy yet devised for the submucous resection of the septum. The lessened time required for the operation is chiefly accounted for by the use of the swivel knife for the removal of the cartilaginous portion of the septum and of the submucous saws for the removal of the perpendicular plate of the ethmoid.

2.—The use of the swivel knife in the removal of the cartilaginous portion of the septum reduces the shock and traumatism to a minimum.

3.—The use of the submucous saws for the removal of the perpendicular plate of the ethmoid also reduces the shock and traumatism.

4.—The deviated portion of the cartilaginous septum and the perpendicular plate of the ethmoid are removed in their entirety (in one piece) and are thus preserved for inspection and study.

5.—Because of the lessened shock and traumatism and the shortened time of anesthesia and operation, infection is less apt to occur, and healing usually takes place by first intention.

6.—Fewer post-operative dressings are required, and the after-treatment is shortened.

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[The experiences of other rhinologists with Ballenger's swivel knife justify the statement that it is a most useful and important contribution to the technic and the armamentarium of septum resection.]

**Acute Rheumatic Fever as Treated by the O'Connor Surgical Treatment of Acute Articular Rheumatism.** J. BENJAMIN DAVIS. *Journal of the Assoc. of Military Surgeons of U. S.*, September, 1905.

This treatment consists in opening the joint, inserting a drainage tube and irrigating each day with a solution of carbolic acid 1-60. The tube is removed on the third or fourth day. Davis reports a case of acute polyarticular rheumatism where salicylates had entirely failed and which responded readily after multiple incisions and irrigation had been performed. In two weeks the symptoms entirely disappeared, and the wounds healed, leaving the patient with no disability whatever. The author quotes O'Connor, who has operated upon 21 cases with results which he claims are superior to those obtained by the ordinary treatment with salicylates. He cites as a decided advantage of this method the fact that in no case was the rheumatic attack followed by a cardiac lesion. Of course it is unnecessary to state that the utmost attention to asepsis is necessary.

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[This method is rather too radical to appeal very rapidly to the general practitioner or even to the surgeon. O'Connor's cases are too few to determine the effect of this heroic treatment upon recurrences.]

**Anaerobic Cellulitis.** J. CLARK STEWART. *Journ. Amer. Med. Assoc.*, August 19, 1905.

Stewart reviews the literature of this subject and reports two cases. The first case arose after a suprapubic puncture of the bladder for retention due to stricture; a cellulitis developed with marked crepitation; after extensive incision with escape of bubbles of gas from the wound, the patient recovered. The second case followed a bullet wound of the left thigh. A cellulitis resulted, accompanied by escape of gas from the wound. No extensive incisions were made and the patient died. In both instances the *bacillus aerogenes capsulatus* of Welch was found in the wound.

In reviewing the subject Stewart says that probably all cases of anaerobic cellulitis are due to this bacillus. The symptomatology is very varied; the only constant and diagnostic symptom is the presence of gas in the tissues or wound secretions occurring from the eighth hour to the sixth day. To confirm the diagnosis one must find the bacillus in smears or, better, by culture. Treatment consists in extensive incisions, constant irrigations and wet dressings. Theoretically peroxide of hydrogen locally is also indicated.

**Additional Observations on Spirochaete Pallida.** (*Zur Kenntniss der Spirochæte pallida.*) W. WECHSELMANN and W. LOEWENTHAL. *Medizinische Klinik*, No. 33, 1905.

The authors have observed that after mercurial treatment, forms comparable to involution forms, are to be found in syphilitic lesions, often after but three to five treatments. These involution forms are short, rod-like, or slightly curved bow-shaped structures, with one or more chromatin granules (nuclei), made visible by the Giemsa stain. In spirochæte from the mouth (nonsyphilitic) similar structures can be traced directly, through more numerous stages, to the present form, and by analogy a similar origin is very likely in the syphilitic variety. Not too much value, from a therapeutic standpoint, should be ascribed to these changes, as any antiseptic treatment apparently thus affects spirochæte.

**Lacerations of the Cervix Uteri.** ARTHUR M. GARDNER. *Medical Record*, August 26, 1905.

Gardner pleads for the more frequent performance of primary suture of the cervix after labor, because it is easily performed and may obviate many of the symptoms which a lacerated cervix may subsequently lead to.

**Dry Iodine Catgut.** ALEXIS V. MOSCHCOWITZ. *Annals of Surgery*, September, 1905.

It having been found that catgut prepared by Claudius' method loses its tensile strength after long-continued immersion in the iodine solution, Moschcowitz has modified the method by simply removing the gut from the solution after eight days and thereafter keeping it *dry* in a sterile vessel, preferably protected from the light.

The catgut, just as it is bought from the dealers, i. e., without removing the fat, is wound in single layers on glass spools and fastened at each end to prevent unravelling. It is then immersed for eight days in a solution of iodine, 1; iodide of potassium, 1; water, 100. Then transferred to an empty sterile jar, it is used as needed, *dry*. Unused portions may be re-sterilized easily.

Moschcowitz reports numerous animal and bacteriological experiments, in addition to his clinical experience with this dry iodine catgut. He concludes: 1. It is absolutely sterile. 2. It is impossible to infect it by ordinary means. 3. Its imbibition with iodine is not sufficient to irritate the tissues. 4. Its tensile strength is greater than that of raw catgut or alcohol-sublimate catgut. 5. It is easily and cheaply prepared. 6. It is absorbed only after it has served its purpose.

**Infantile Uterus and Its Treatment, with a New Operation for Anteflexion and Stenosis of the Internal Os.** C. W. BARRETT. *American Journal of Obstetrics*, September, 1905.

Barrett reviews the various anatomical and theoretical factors which probably cause the symptoms seen in connection with anteflexed infantile uteri. The dysmenorrhea in some cases may be due to a muscular, fibrous, membranous or musculo-fibro-membranous constriction at the internal os, combined, in most instances, with a diseased mucous membrane and aggravated by the extreme length of the cervix and the anteflexion. Judicious bringing-up without continuous mental overstrain, sufficient exercise in the fresh air, and early marriage and child-bearing often suffice to overcome the development of such conditions. Where, however, the diseased condition is fully developed and has not yielded to milder measures, such as repeated dilatations, curetting, tampons and douches, Barrett proposes a new operation, which is to relieve not only the anteflexion, but also the stenosis at the internal os. In brief, the procedure is as follows:—preliminary dilatation, and, if necessary, curettage and amputation of cervix; median laparotomy; a tenaculum is placed on the posterior surface of the uterus just above the flexion and a *longitudinal* incision made down to or even into the mucous membrane. The incision is sewed up *transversely*, thus broadening and shortening the cervical canal and also straightening the flexion. The author has used this method for one and a quarter years and claims good results for it.

**Collodion; Its Use When the Membrana Tympani and Malleal Ligaments are Relaxed.** W. S. BRYANT. *Annals of Otology, Rhinology and Laryngology*, June, 1905.

The author finds contractile collodion to be of use in two classes of cases. 1. In relaxed posterior upper segment of the membrana tympani, a very common condition. 2. In laxity of the malleal ligaments, especially the malleo-incudo-tympanic.

The conclusions arrived at by the author are: 1st. When the Eustachian tube is not perfectly patulous there is a possibility of overcoming the natural elasticity of the drum membrane by too frequent inflation, which may even also cause laxity of the ossicular ligaments. 2nd. Treatment of this condition offers an encouraging prognosis. 3d. Untreated, this condition has little tendency to spontaneous cure but rather to an increased defect.

**Cystitis of the Trigonum in the Female.** (*Die Cystitis trigoni der Frau.*) A. HEYMANN. *Centralblatt f. Harn- u. Sexual Organe,* Heft 8, 1905.

Among the patients of Knorr's clinic every fifth woman complained of urinary symptoms and every eighth woman suffered from cystitis trigoni, either alone or in conjunction with some gynecological trouble. The symptoms consisted of frequent and painful micturition; the urine shows only very slight changes or none at all, but cystoscopically an hyperemic trigonum is found. In the early stages acute hyperemia, limited to the trigonum, can be noted; later the trigonal mucous membrane shows desquamation of its epithelium, which loses its luster and transparency, and in very severe cases small hemorrhages and ulcerations are noted. In chronic cases the mucous membrane is thickened, raised into folds and satiny, sometimes almost papillomatous. In acute cases bladder irrigations and urotropin, in chronic cases 1 per cent. silver nitrate topically applied (cotton applicator through urethroscope, urethroscope then withdrawn, leaving applicator in situ for a short time) are indicated.

**An Analytical and Clinical Study of Thirty Cases of Ectopic Pregnancy.** SAMUEL M. BRICKNER. *Medical News,* August 12, 1905.

The author arrives at the following conclusions: 1. Sterility does not necessarily precede the development of ectopic pregnancy. If it does exist, its cause is often the same as the cause of the abnormal pregnancy. 2. The main characteristic of the bleeding in ectopic gestation is its great irregularity, there being no type. As a general rule it is not profuse. It may be constant or intermittent, and its character or profuseness has no relation to the type of the lesion. A chilly feeling often accompanies the bleeding, and vomiting and nausea may accompany the first flow. The uterine flow has apparently no connection with the death of the fetus. 3. The pain in tubal pregnancy is usually localized over the site of the lesion. It has no definite character; it may be cramp-like over the affected tube, it may simulate labor pains, it may be sharp or sudden or it may be of a bearing down nature. The pain during a tubal abortion and that concomitant with the presence of a hematosalpinx are usually cramp-like. 4. The usual symptoms of pregnancy may be present. They are frequently absent, but their absence does not militate against the possibility or probability of an ectopic pregnancy. 5. Tenderness on palpation of the mass adjacent to the uterus is of great diagnostic value when taken in connection with the history and other pelvic findings. 6. A rise of temperature to between 99 degrees and 100 degrees F. in the absence of signs of infection is worthy of consideration in the diagnosis. 7. The causative factors of tubal pregnancy are probably numerous. It is likely that atavistic tendencies, congenital or acquired anomalies, pelvic inflammations, ovarian and tubal disease, all play a rôle in individual cases; but none of these factors alone is sufficient to explain all cases. 8. We have as yet no definite data by which we can differentiate diagnostically between all the varieties of ectopic gestation. Occasionally this may be done, but it is impossible always to distinguish between an unruptured tube and a tubal mole. An hematocele and a freshly ruptured tube can always be differentiated from the usual lesions. The value of Werth's dictum to regard every unruptured tube in the light of a malignant neoplasm, has not diminished with the years.

**The Localization of Chronic Suppurations of the Urinary Tract.** ARTHUR M. CHUTE. *Boston Medical and Surgical Journal,* August 24, 1905.

Chute regards the ordinary two- or even three-glass test to determine the origin of urethral pus as misleading. A far more accurate method is to first irrigate the anterior urethra, and then allow the patient to urinate. The only safe method to differentiate bladder from renal suppurations is by cystoscopy; the latter procedure combined with ureteral catheterization will determine from which kidney the pus arises. No reliance should be placed on symptoms alone.

**Appendicostomy and Cecostomy in the Treatment of Chronic Colitis.** WILLY MEYER. *The Medical News,* August 26, 1905.

Meyer reports five cases of chronic colitis which he has treated by the above methods of operation with good results. These cases include one case of papillomatous colitis, an amebic colitis, a tuberculous colitis and two cases of chronic ulcerative colitis. All cases were markedly improved. The appendicostomy is not made for purposes of drainage, but only with the idea that the entire colon may be irrigated and flushed with various solutions. Meyer employs, as a general rule, silver nitrate of gradually increasing strength, beginning with 1 to 10,000 or 20,000, followed by salt solution; he has also used thymol 1-1,000, and in the tuberculous case balsam of Peru and iodoform emulsions were injected into the bowel. The charge that the opening is too small for irrigation purposes is met by the statement that in one case two quarts of solution passed the whole length of the large intestine in less than ten minutes through a tube 14 mm. in diameter. As regards the technic of the operation, Meyer prefers to stitch the place where the appendix enters the cecum into the upper angle of the wound and allows the appendix to pass obliquely through the various layers of the abdominal wall so that the tip is in the lower angle. When the lumen of the appendix is large he believes it wise to reverse this procedure in order to prevent leakage. The tip of the appendix should be cut off at the time of the operation.

**A Contribution to the Surgery of Perforating Gastric Ulcer.** A. B. MITCHELL. *N. Y. Medical Journal,* August 26, 1905.

Mitchell reports thirteen cases. The pain of perforated gastric ulcer comes on with startling severity and is most severe in the epigastrium, but may simulate biliary colic or the pain of appendicitis. The tenderness also is usually epigastric. Shock is very characteristic, but is occasionally slightly marked. Vomiting was present in eight cases and is not long continued, occurring probably only two or three times. The absence of liver dulness is not pathognomonic, but is of great value if associated with other symptoms. The author lays great stress on the period of repose which follows the cessation of the acute symptoms. This is of importance because it may lead to a misinterpretation of the gravity of the case. Mitchell lays great stress on the importance of early and rapidly performed operations. Of the thirteen cases, six recovered.

**Peroneal Resection as a Means of Correction in Rigid Valgus.** CHARLES F. PAINTER. *Boston Medical and Surgical Journal,* August 10, 1905.

Painter divides flat feet into two groups—the operative and the non-operative. In the latter group are comprised the ordinary types of "weak foot," pronated feet, and non-spasmodic breaking down of the arches. The operative group is of three varieties. In the first class the function is impaired through inability to allow inversion owing to spasm from intertarsal sensitiveness. The arch is usually low, the foot is passively congested and slightly swollen. In the second class, the peroneal type, there is more deformity, in the form of abduction or pronation or both, and there is rarely if any lowering or prominence of the scaphoid. The characteristic symptom of this type

of deformity is the tautness of the peroneals on abduction or pronation of the foot. In the third class are the extreme cases of flat foot; the arch is entirely gone, the scaphoid is low, the head of the astragalus and the internal malleolus are prominent. The foot is markedly abducted, this abduction not being reducible even under anesthesia. In the first two classes the operation of peroneal resection is indicated. This consists in exposure of the peroneals, resection of ¾" to 1" of the tendons, with destruction of the sheath. The foot is then over-corrected and retained in position by a plaster of Paris bandage for from two to three weeks. At the end of the time Thomas heels are applied and the patient is allowed to walk. In the third class the scaphoid is excised in addition to the peroneal resection, the foot is then placed in the position of extreme inversion and kept in this position by plaster of Paris for six weeks. Painter has practiced peroneal resection in thirty instances and excision of the scaphoid in twelve. The author declares himself as extremely satisfied with the results.

**Final Results in the X-Ray Treatment of Cancer, Including Sarcoma.** W. B. COLEY. *Annals of Surgery*, August, 1905.

During a period of three years Coley has treated 167 cases of malignant tumor with the x-ray. His conclusions are as follows:

I. That the x-ray exerts a powerful influence upon cancer cells of all varieties, but most marked in cases of cutaneous cancer.

II. In some cases, chiefly in superficial epitheliomata, the entire tumor may disappear, probably by reason of fatty degeneration of the tumor cells with subsequent absorption.

III. In a much smaller number of cases of deep-seated tumors, chiefly cancer of the breast and glandular sarcoma, tumors have disappeared under prolonged x-ray treatment. In nearly every one of these cases, however, that has been carefully traced to final result, there has been a local or general return of the disease within from a few months to two years.

IV. In view of this practically constant tendency to early recurrence, and in the absence of any reported cases well beyond three years, the method should never be used except in inoperable cases, or as a prophylactic after operation, as a possible, though not yet proven, means of avoiding recurrence.

V. The use of the x-ray as a pre-operative measure in other than cutaneous cancer is contraindicated (1) because the agent has not yet been proven to be curative; (2) because of serious risks of an extension of the disease to inaccessible glands or to other regions by metastasis during the period required for a trial of the x-ray.

**Prostatectomy.** (*Ueber Prostatektomie.*) J. VERHOOGEN. *Centralblatt f. Harn- und Sexual-organe*, Heft 7, 1905.

Prostatectomy has been employed in malignant tumors, in tuberculosis and in hypertrophied prostate. Only in the last named condition are results encouraging. Thirty-seven per cent. of men beyond sixty years of age suffer from prostatic hypertrophy. In acute retention, catheterization is indicated. Where advantageous social standing permits of aseptic catherization it may be continued for years. Of 700 operated cases the mortality has been seven per cent.

The author performs perineal prostatectomy with the patient face downward on the table and the pelvis slightly elevated. He uses a transverse incision immediately anterior to the sphincter ani, and carefully dissects, keeping as close to the rectum as is consistent with safety. Upon reaching the edge of the sphincter (level of recto-urethral muscle) blunt dissection will free the prostate. The urethra is opened by a transverse incision, and first the right, then the left lobe is enucleated. The vas can rarely be spared. Of twenty-one cases, one died several weeks after operation from pyelocystitis; there were four urethral fistulæ, one of which became cancerous after one year. In one case the recto-urethral fistula caused death from sepsis and cachexia in the course of a year. The other cases showed a good result. Verhoogen does not fill the bladder before operation and uses no mechanical prostatic tractor.

Of eight cases of suprapubic prostatectomy, three died. He prefers this method in those cases in which the prostate projects into the rectum. His technic is the orthodox method. He drains by injecting fluid through a catheter introduced *per urethram*, the surplus being carried off by a drainage tube in the suprapubic opening.

**On the Cause of Death in Operated Cases of Intestinal Perforation Occurring in Typhoid Fever.** J. H. ANDERSON. *Pennsylvania Medical Journal*, July, 1905.

Anderson has performed eighteen operations for typhoid perforation, with three recoveries. These recoveries were in patients in whom the perforation had occurred within thirty-six hours preceding operation. The importance of early operation is thereby emphasized. In all the cases that recovered he *evacuated the contents of the intestine through the perforation before suturing*, and he noted a decided amelioration of the post-operative symptoms by this manipulation. He therefore regards the increased absorption of toxic material from the mucous membrane, due to the paralytic ileus resulting from the perforation, as an important factor in the mortality, and recommends the above procedure in all cases of typhoid perforation.

**A New Method of Extirpating the Internal Saphenous and Similar Veins in Varicose Conditions; a Preliminary Report.** W. L. KELLER. *Medical Record*, August 19, 1905.

The vein is first exposed in the femoral opening, and ligated as high up as possible; the lower end of the vein is treated in a similar manner. The vein is now cut below the proximal end and above the distal end, thus leaving the intermediate section ready for removal. The upper end is now split for a short distance; a strong ligature is then tied to the upper end, a wire probe is passed through the lumen of the vessel from the lower opening and the ligature is threaded through the eye; the probe is then withdrawn and the ligature brought out on the surface; gentle traction is now made on the ligature, so that the vein is turned inside out and is completely removed. Occasionally a slight puckering in the skin may be noted at a point midway between the two ends, indicating a communication with a smaller branch; a small incision may be made over this area and the branch ligated; traction is again employed and the vein comes out entire. By this method the author avoids the usual long scar in resection of the saphenous vein. He reports three cases.

**The Hypodermatic Use of the Salicylate of Mercury in the Treatment of Syphilis.** E. T. KILBANE. *Medical Record*, July 29, 1905.

This method is rapidly becoming adopted by a large number of syphilologists, judging from the extensive literature that has recently appeared on the subject. Kilbane summarizes the method, in the main, as follows: The mixture used is a 10% solution in sterilized liquid albolene. The dose to begin is ¼ grain, the interval between treatments four days. The dose and the length of the intervals are gradually increased until the patient takes ½ grain weekly. The injections are made with an ordinary hypodermatic syringe (except that the caliber of the needle is larger), deep into the gluteal region, care being taken that a vein is not entered. The advantages of this method of treatment are too obvious to demand formulation.

**Some Remarks on the Epiphyses of the Long Bones, and Their Bearings on the Operation of Resection.** JOHN KNOTT. *N. Y. Medical Journal,* August 19, 1905.

Knott endeavors to correct many of our commoner notions of the anatomy of the epiphyses and succeeds in giving us some very interesting information. For instance, the lower epiphysis of the humerus is usually described as having a supracondyloid position, and surgeons persist in speaking of the so-called "epiphyseal fracture" which may occur in early life. As a matter of fact, the lower epiphysis is formed by three or four centers of ossification which coalesce to form a thin encrusting layer of bone moulded over the lower end of the shaft in a curve adapted to that of the articular cartilage; the fourth ossific center forms the internal condyle. The result of this arrangement is, "that in epiphyseal fracture the lower fragment carries with it only a small portion of the external epicondyle; while it removes either the projecting tip of the internal epicondyle or probably none at all, depending on the age of the patient." The extreme thinness of the epiphyseal cartilage renders it, of course, absolutely impossible to remove more than a very thin slice of bone. The upper extremity of the ulna has an epiphysis of considerable vertical extent. In addition, it presents an almost unknown epiphysis occupying the position of the insertion of the triceps tendon, presenting the appearance of a liliputian patella. In the upper end of the femur it is interesting to note that the epiphysis of the head is only a thin meniscus adapted to the articular cartilage. The lower epiphysis of the femur is very large and is the most important center in connection with the growth of the limb. It is the last to unite with the shaft. The upper epiphysis of the tibia is a very thin lamina, so that it is impossible to save it in any resection of the joint.

**Three Cases of Separation of the Descending Process of the Upper Tibial Epiphysis in Adolescents.** G. H. MAKINS. *Canada Lancet,* July 22, 1905.

In two cases the separation was due to a kick and in the third to a strenuous season of football. The diagnosis was made by x-ray photographs. The most characteristic indication clinically is the "giving way" of the forcibly extended knee, and is usually mentioned by the patient as antecedent to attacks of pain, which are variable in amount and continuity. There are local tenderness, swelling over the epiphyseal line and sometimes redness. After a time an exudate forms, which results in a more or less prominent tubercle, and in one case led to the production of a sesamoid bone. Treatment consists in rest and local support.

**Rapid Healing in Septic Cases; Including the Use of Iodoform-Wax in Bone Cases.** ARTHUR T. MANN. *N. Y. and Phila. Med. Journal,* July 22, 1905.

Mann is very enthusiastic in the use of the Powell method of dealing with acute suppurative inflammations; i. e., swabbing the wound with 95 per cent. carbolic acid followed by alcohol. He has tried it on abscesses in the soft parts and in glands and has obtained primary union in most instances. The author also speaks highly of the Mosetig-Moerhof iodoform-wax filling of bone cavities; the only addition to the technic of this operation introduced by Mann is the application of carbolic acid and alcohol before pouring in the wax mixture.

**Spina Bifida, with a Report of Three Hundred and Eighty-five Cases Treated by Incision.** J. E. MOORE. *Surgery, Gynecology and Obstetrics,* August 1905.

This collection of cases, to which the author contributes seven, shows the high rate of mortality (30-50 per cent.) incident to operations performed on very young or complicated cases. The causes of death are, chiefly, shock, convulsions, meningitis, hydrocephalus and late infections. The indications to be met with in an operation for spina bifida are removal of the sac and closure of the cleft. The simplest technic is to be preferred. Bone plastics, careful preparation and *freeing of nerves which end in the sac* are to be condemned. When impossible to free nerves apparently of functional value, the part or all of the sac should be reduced within the bony canal. The cleft is closed with muscle-fascia flaps. In conclusion Moore says:

"1. Operation upon children of very tender age is scarcely worth while, because it is accompanied by a large mortality rate, and because it does not stop the progress of the progressing cases.

"2. Patients 5 or more years old can be operated upon safely.

"3. Patients with large or rapidly growing tumors, with hydrocephalus and with paralysis or deformities of the extremities are not cured."

**A Trustworthy Method of Detecting Vesical Calculi with Roentgen Rays.** (*Die zuverlässige Diagnose von Blasensteinen, mittelst Roentgenaufnahmen.*) J. P. HABERERN. *Centralblatt f. K. Harn- und Sexualorgane,* Heft 7, 1905.

The author first injects a bismuth suspension into the bladder and then washes this viscus, the bismuth clinging to the rough surfaces of the stone. He now injects air into the bladder, first letting out the urine, and then makes the exposure. Only where hemorrhage, contracted bladder or other technical difficulties, preventing cystoscopy, are encountered, need this procedure be employed.

**Operation for Penile and Penoscrotal Hypospadias in One Stage, with Preceding Perineal Section.** (*Eine einzeitige Operation der Hypospadia penis und penoscrotalis mit vorausgehendem Perinealschnitte.*) H. VULLIET. *Zentralblatt f. Chirurgie,* No. 31, 1905.

Vulliet mentions the dangers and difficulties in using the permanent catheter, in employing no catheter and in operation in two or more stages. All these disadvantages can be avoided by employing the old method of perineal section, first advised by Thiersch in connection with epispadias operations, and now generally abandoned. A small perineal wound in which a catheter is kept for 8 days prevents any soiling of the site of the plastic. After one week the catheter is removed and the patient treated as after an external urethrotomy. Healing of the fistula is very rapid.

**The Operative Treatment of Empyema of the Antrum of Highmore.** OTTO F. FREER. *Chicago Medical Recorder,* July, 1905.

Freer condemns the old operations of drilling a hole through a molar tooth, and the Kuester method, in which drainage is established through the alveolar process. He confines himself entirely to the intranasal operations. In the mild, acute or subacute cases he recommends the procedure of Siebenmann, in which a permanent opening is made through the middle meatus, which can be easily done with a pincette and curved trocar. For the severe and chronic cases with profuse and foul discharge he performs the operation of Réthi. The inferior turbinated is first removed. The anterior two-thirds of the nasal wall is then removed with the aid of numerous applications of trephines and punch forceps. For the details of the operation, the reader is referred to the original paper.

**Epigastric Linea Alba Hernia as a Little Recognized Source of Abdominal Pain and of Gastric Symptoms.** D. D. STEWART. *American Medicine,* July 29, 1905.

Stewart reports a number of cases of this condition, in which diagnoses of various gastro-intestinal disturbances were made before the condition was correctly recognized and relief obtained by operation. It occurs in about 1 per cent. of all varieties of herniæ, and is far more common in the male than in the female. There is a congenital or acquired diastasis of the recti unto which a small mass of properitoneal fat enters or more commonly a portion of omentum. The mass is usually very small, varying in size from that of a pea to that of a marble.